GENERAL NOTES

A. SPECIFICATIONS


A2. Design in accordance with the American Association of State Highway and Transportation Officials (AASHTO) LRFD Bridge Specifications, 6th Edition.


B. LOADS

B1. Permanent Loads

B1.1 Concrete dead load 0.150 kcf (includes weight of the reinforcing and prestressing steels)

B1.2 Superimposed dead load

B2. Live Loads

B2.1 Superimposed live load

B2.2 Live Loads AASHTO loading class HL-93.

B3. Thrusts

B3.1 The forces included in the structure due to temporary load of 30°F and a temperature fall of 10°F from the temperature of 30°F but accounted for in superstructure. The coefficient of thermal expansion used is 0.000005 in/ft/°F. The effect of temperature gradients per NCHRP Report 216 "Thermal Effects in Concrete Bridges Structures." The Temperature gradients assumed for design are per Zone 1, for plain concrete surface.

B4. Creep and Shrinkage

B4.1 Creep and Shrinkage Per the CEB-FIP Model Code 1990. The effect of shrinkage and creep has been assumed to be 0.5%.

B5. Earthquake

B5.1 Earthquake: Seismic Zone 1, Site Class D, PGA = 0.074G

B6. Wind

B6.1 Base wind velocity of 100 mph.

B6.2 Equivalent fluid pressure (Active): 0.035 kcf

C. MATERIALS

C1. Concrete

C1.1 Concrete minimum 28 days compressive strength Superstructure box girder: f'c = 5.0 ksf  Place, barriers and drilled shafts, drilled shafts, abutments, wingspans, and all other concrete: f'c = 3.5 ksf

C1.2 Superstructure concrete stresses (service limit state)

Allowable tension 0.85/0.45 f'c (ksi)

All stress compression per AASHTO LRFD.

C1.3 Segment construction and casting

Minimum concrete strength prior to stressing 2,000 psi, and longitudinal post-tensioning releasing anchor and anchoring to a 3.5 ksf, see also Post-Tensioning Notes.

C1.4 All concrete shall be class 'S'.

C1.5 All exposed corners shall be chamfered 3/4" unless shown otherwise on the plans.

C1.6 Construction joints in box girder shall be made where shown on the plans. Additional joints shall be made only with the approval of the Engineer.

C2. Reinforcing Steels

C2.1 Reinforcing steel shall conform to ASTM A615. All reinforcing bars shall be furnished as Grade 60.

C2.2 All reinforcing steel shall have 2" clear cover for primary reinforcement and 1" for stirrups, ties, and spacers unless otherwise noted.

C2.3 All bend dimensions for reinforcing steel shall be cut-to-out-of-bar. All placement dimensions shall be to center of bar unless noted otherwise.

C2.4 Field adjustments shall be made only with the approval of the Engineer. Cut bars shall be accompanied by bars of the same size with the appropriate laps across the cut location. The shop drawings shall indicate any additions or rearrangements of reinforcing steel from that shown on the plans.

C2.5 Bar laps, hooks, and bends shall have a minimum length in accordance with AASHTO, or as shown on the plans.

C3. Prestressing Steels

C3.1 Prestressing steel strands shall conform to ASTM A416 (AASHTO M31), Grade 270, low relaxation strands.

D. DRAINAGE

D1. No drain inlets or pipes required in this structure.

D2. Erosion and sedimentation noted.

D3. Drainage to be graded and properly drained.

E. CONSTRUCTION CLEARANCES

E1. Inventory and operating ratings are in accordance with AASHTO Load and Resistance Factor Rating Method. Inventory Rating 1.16 Operating Rating 1.50

F. CONSTRUCTION CLEARANCES

F1. Union Pacific Railroad (UPRR) Trackage 21½" vertical from top of rail

F2. Vehicular Roads 10½" vertical

G. MISCELLANEOUS NOTES

G1. The Contractor shall verify the locations of all utility lines and notify the respective owners before commencing excavation.

G2. Existing Bridge - The Contractor shall completely remove/demolish the existing 22nd Street Bridge (Structure No. 9011) in accordance with Project Special Provisions, Item 2020002 - Removal of Bridge.

G3. Contractor is responsible for stability of structure during construction.

G4. Contractor is responsible for the placement of reinforcing and prestressing steels in their proper locations as shown on the plans.

G5. All dimensions shown on the plans are measured horizontally or vertically.

G6. Profile grade elevations shown on the plans are finished elevations at the top of concrete deck.

G7. Barriers shall be constructed after all post-tensioning is complete.

G8. Permanent deck forms are not allowed.

G9. Barriers shall be constructed after all post-tensioning is complete.

G10. Provisions have been made for the jacking of the superstructure for replacement of bearings.

G11. Contractor shall take care in placement of the reinforcing and prestressing steels to ensure that proper consolidation is achieved. After placement of the superstructure, the Engineer shall inspect the joint for voids. All voids shall be repaired by the Contractor by epoxy injection.

G12. Provisions have been made for the placing of the reinforcing and prestressing steels.

G13. All reinforcing and prestressing steels shall be furnished as Grade 60.
### APPROXIMATE BRIDGE QUANTITIES

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**Notes:**
1. The cost of structural excavation & structure backfill is incidental to the abutment and pier concrete.
2. For information only. Approx. Weight of Longitudinal Prestressing Steel Strand (120') = 360.5 lbs.
3. Approx. Weight of Longitudinal Prestressing Steel Strand (100') = 330.5 lbs.
4. Approx. Weight of Transverse Prestressing Steel strand (100') = 674.5 lbs.
5. Approx. Weight of Transverse Prestressing Steel strand (120') = 674.5 lbs.

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**Typical Section & Quantities**

DEPARTMENT OF TRANSPORTATION/ENGINEERING DIVISION

22ND STREET KINO PARKWAY TO TUCSON BOULEVARD

VEHICULAR BRIDGES

Preliminary 100% Review
Not for Construction or Recording
June 2018

DEPARTMENT OF TRANSPORTATION/ENGINEERING DIVISION

22ND STREET KINO PARKWAY TO TUCSON BOULEVARD

VEHICULAR BRIDGES

Preliminary 100% Review
Not for Construction or Recording
June 2018
ELEVATION (EASTBOUND SHOWN, WESTBOUND SIMILAR)  

1"=20'  

Notes:  
1. Stations, Offsets and Span Lengths are measured along 22nd St. Cst.  
2. Elevations are measured along the Right Median PGL for the Eastbound Bridge.  
3. Elevations are measured along the Left Median PGL for the Westbound Bridge.  
4. See Sheet 5-1-13 for track alignment and spacing.

temporary Supports only during construction, Typ.  

Temporary Support

ELEVATION (EASTBOUND SHOWN, WESTBOUND SIMILAR)  

1"=20'  

Notes:  
1. Stations, Offsets and Span Lengths are measured along 22nd St. Cst.  
2. Elevations are measured along the Right Median PGL for the Eastbound Bridge.  
3. Elevations are measured along the Left Median PGL for the Westbound Bridge.  
4. See Sheet 5-1-13 for track alignment and spacing.
Two working days before you dig. CALL FOR THE BLUE STAKES

CALL COLLECT
Blue Stake Center

Elevation in feet
Tracks
UPRR
Exist.

Notes:
1. Stations and Offsets are measured along 22nd St. CST.
2. Elevations are measured along the Right Median PGL for the Eastbound Bridge.
3. Elevations are measured along the Left Median PGL for the Westbound Bridge.

ELEVATION (EASTBOUND SHOWN, WESTBOUND SIMILAR)
1. Stations and Offsets are measured along 22nd St.
2. Elevations are measured along the Right Median PCL for the Eastbound Bridge.
3. Elevations are measured along the Left Median PCL for the Westbound Bridge.

Notes:
- Existing Bridge to be realigned
- E-Plat 4 (W)
- Existing E-Plat 4 with Pedestrian Fencing
- Approximate Existing Grade
- Finished Grade
- New Concrete Lined Channel

ELEVATION (EASTBOUND SHOWN, WESTBOUND SIMILAR)

PLAN
- New 6 Span Cast-In-Place Concrete Post-Tensioned Segmental Bridge
- Contour Intervals = 1 ft.

ELEVATION (EASTBOUND SHOWN, WESTBOUND SIMILAR)
POST-TENSIONING NOTES

1. See the General Notes.

2. Post-Tensioning characteristics assumed for design:
   - Friction Coefficient = 0.22, Low Relaxation Strand
   - Modulus of Elasticity, Es = 300,000 ksi
   - Anchor Set = 3% for longitudinal multi-strand tendons
   - 1% for transverse mono-strand tendon
   - Area of Strand, As = 0.217 sq.in.

3. Jacking Stress assumed for design = 75% of the guaranteed ultimate tensile strength (uts) of the strands.

4. Alternative sizes and types of tendon will be permitted per the Special Provisions; however, loop tendons will not be permitted.

5. The Contractor shall design the tendon anchorage hardware and supplementary reinforcement included in this local zone, including spirals for confinement of concrete, if required, subject to the approval of the Engineer. The Contractor shall submit test data demonstrating the suitability of the proposed hardware to the Engineer for review.

6. The Contractor shall assume responsibility for the cutting or replacement of reinforcement which interferes with stressing and/or placing of tendons, subject to the approval of the Engineer. All cut bars must have an accompanying bar taped across the cut.

7. Ducts for longitudinal tendons shall be galvanized corrugated metal of 24 gauge thickness, or greater than 2½-in. in diameter, and of 2½ gauge thickness otherwise. Ducts for transverse tendons may be galvanized corrugated metal or high density polyethylene conforming to ASTM D3350, with spiral corrugations and walls 0.04 - 0.06 in. thick. Future post-tensioning ducts shall be of size and type indicated on future Post-Tensioning Details drawings.

8. Ducts shall be installed with mandrels and thoroughly tied to the reinforcement cages to prevent misalignment during concreting. Longitudinal ducts shall be supported at not less than 4'-0" intervals and transverse ducts shall be supported at not less than 2'-0" intervals.

9. Concrete must attain a minimum strength (f'ci) of 3.5 ksi before tendons are stressed, increase if required by post-tensioning supplier.

10. Transverse tendons in any segment shall be stressed before the longitudinal tendons in that segment. Except for the tendon closest to the leading bulkhead which will be stressed to 50%, this tendon will be stressed the additional 50% with the adjacent segment.

11. The sequence of stressing of bottom slab tendons shall be as shown on the construction sequence drawings.

12. Each pair of tendons to either side of the centerline of box girder shall be stressed prior to moving to the next pair of tendons.

13. Forces and rebar shall not interfere with stressing, but shall permit the superstructure to lift and shorten.

14. Tendons shall be grooved per the Special Provisions.

15. Duct vents shall be provided at anchorages, and high and low points of tendon profiles where applicable.

16. Construction personnel shall not stand directly behind or above jacks or dead end anchors during stressing.

17. All anchorages and tendons shall be permanently protected from corrosion in accordance with project requirements.

Post-Tensioning Notes

June 2018

DEPARTMENT OF TRANSPORTATION/ENGINEERING DIVISION

No. 22ND STREET KING PARKWAY TO TUCSON BOULEVARD

VEHICULAR BRIDGES

No. 19

June 2018

Preliminary

Review

Net for

Construction

or Recording

Not for

Review

June 2018

Post-Tensioning Notes

June 2018
SUPERSTRUCTURE CONSTRUCTION NOTES:

1. The notes on this drawing are applicable to the assumed Construction Sequence No. 1, and Assumed Construction Sequence No. 2 drawings that follow. Additional information regarding maintenance of traffic during construction can be found on Traffic Control Plans and Construction Phasing Plans.

2. The information shown on the Assumed Construction Sequence No. 1 & 2 drawings illustrate the assumed Construction Sequence No. 1 & 2. The Contractor is responsible for selecting the means and methods of construction and shall submit details of these means and methods to the Engineer for review. This shall include details of the construction sequence as well as supporting calculations showing the influence of the selected sequence, loads, and details on the structure, in accordance with the contract plans and Special Provisions.

3. The Contractor shall be responsible for stability of the structure during construction with due consideration of the construction sequence assumed in design and his selected means and methods.

4. The Contractor shall be responsible for the design of falsework, formwork, and other temporary works in conformance with AASHTO and the requirements of the Standard Specifications and Special Provisions. Falsework required for construction of the superstructure shall be in accordance with the approved Construction Sequencing Contract plans and Special Provisions. Falsework required for the construction of the superstructure, as specified by the railroads, shall also be in accordance with railroad requirements and shall provide at least the minimum temporary railroad clearances required during construction. All other temporary clearances shall be met, and the Contractor is responsible for providing all specified clearances of the affected railroad tracks. OSHA, Arizona AASHTO, City of Tucson, and other governing agencies shall be conformed to, and approved by the Engineer. The Contractor shall include the cost of meeting all requirements in the contract bid price.

5. The Contractor shall be responsible for the design of falsework, formwork, and other temporary works in conformance with AASHTO and the requirements of the Standard Specifications and Special Provisions. Falsework shall be designed to not interrupt railroad operations and shall be designed to enable the construction of the superstructure at the support(s) location(s) and all other temporary supports and their foundations, for additional reinforcing and/or other modifications needed to resist construction loads. Additional reinforcing and/or other modifications needed to resist construction loads shall be included in the contract bid price. The Contractor shall include the cost of meeting all requirements in the contract bid price.

6. The bridge piers have NOT been designed to resist the out-of-balance loads during cantilever construction. Therefore, additional reinforcing and/or other modifications needed to resist construction loads. Additional reinforcing and/or other modifications needed to resist construction loads shall be included in the contract bid price. The Contractor shall include the cost of meeting all requirements in the contract bid price.

7. The Contractor is responsible for checking the adequacy of the structure and providing any additional reinforcing and/or other modifications needed to resist construction loads. Additional reinforcing and/or other modifications needed to resist construction loads shall be in accordance with the approved Construction Sequencing Contract plans and Special Provisions. Falsework shall be designed to enable the construction of the superstructure at the support(s) location(s) and all other temporary supports and their foundations, for additional reinforcing and/or other modifications needed to resist construction loads. Additional reinforcing and/or other modifications needed to resist construction loads shall be included in the contract bid price. The Contractor shall include the cost of meeting all requirements in the contract bid price.

8. Prior to any closure pour the tip of each cantilever each side of closure must be prevented from any relative displacement or rotation by utilizing strongback. The Contractor shall be responsible for determining the location and loads acting on the support(s) and shall provide all necessary information to the Engineer. The Contractor shall submit details of these means and methods to the Engineer for review. This shall include details of the construction sequence as well as supporting calculations showing the influence of the selected sequence, loads, and details on the structure, in accordance with the contract plans and Special Provisions.

9. All transverse tendons shall be stressed prior to the addition of the transverse tendons to the structure. The Contractor shall be responsible for the design of the transverse tendons and the construction of the structure. The Contractor shall submit details of these means and methods to the Engineer for review. This shall include details of the construction sequence as well as supporting calculations showing the influence of the selected sequence, loads, and details on the structure, in accordance with the contract plans and Special Provisions.

10. For existing clearances to railroad tracks, see railroad Clearances, S-11. For additional information related to the construction near railroad tracks, see Superstructure Construction - UPRR Clearances, S-11.

11. The additional information related to the construction near railroad tracks, see Superstructure Construction - UPRR Clearances, S-11.
STAGE I
1. Construct Drilled Shafts.
2. Construct Footings for Abutments and Drilled Shaft Caps for Piers.
3. Construct Piers and Pier Table Pier 1 and erect Temporary Tower Support.
4. Construct Abutments, See Backfill requirements.
5. Stress Transverse Tendons and Top Slab Tendon in Pier Table Pier 1. Work on falsework is independent from the cantilever construction.
6. Erect falsework in Span 1. Work on falsework is independent from the cantilever construction.
7. Cast portion of Span 1 on falsework, CIP on falsework is assumed to be constructed such that the closure at Span 1 commences after segment 15 of Pier 1 is cast.

STAGE II
1. Erect form traveler A and B at Pier 1.
2. Cast Cantilever Segment 1.
3. Stress Transverse Tendons and Top Slab Tendon when concrete has reached required strength.
4. Advance form traveler A.
5. Cast Cantilever Segment 2.
6. Stress Transverse Tendons and Top Slab Tendon when concrete has reached required strength.
7. Advance form traveler B.
8. Continue casting segments in sequence shown and stressing Transverse Tendons and Top Slab Tendons when concrete has reached required strength. Apply Counterweight as needed (See Note 5-S-108).
9. Erect falsework and cast Span 5 and portion of Span 4 on falsework, CIP on falsework is independent from the cantilever construction. However, it must be completed at the time that Pier 3 cantilever construction is completed such that work on falsework immediately after segment 15 is cast.
10. Construct Pier Table Pier 2 and erect Temporary Tower Support.
11. Stress Transverse Tendons and Top Slab Tendons in Pier Table Pier 2 per Post-Tensioning Notes and Top Slab Tendon Layout dwgs.

Assumed Construction Sequence - 1 & 2 of 29
CALL FOR THE BLUE STAKES
STAKE-IT
1-800-CALL COLLECT
Blue Stake Center
Two working days before you dig.

Assumed Construction Sequence - 2, 6/11/2018

1. Cast Closure Segment in Span 1. Stress Transverse Tension in closure segment, remove Counterweights and remove Form Travelers A and B from Pier 1.
2. Cast Cantilever Segment 1. Stress Transverse Tension in closure segment. Cast cantilevers, Stress Bottom Slab Tendons in Span 1 per Post-Tensioning Notes & Bottom Slab Tendon Layout Schematic. Remove temporary tower support after the first set of bottom slab tendons has been stressed. Remove falsework in Span 1 after all bottom slab tendons have been stressed.
3. Cast Form Travelers A and B at Pier 2.
4. Cast Cantilever Segment 1. Stress Transverse Tension and Top Slab Tension and falsework has reached required strength.
5. Advance form traveler A.
6. Cast Cantilever Segments in sequence similar to construction of cantilevers.
7. Construct Pier Table Pier 3 and erect temporary Tower Support.
8. Stress Transverse Tensions and Top Slab Tensions in Pier Table Pier 3 per Post-Tensioning Notes & Top Slab Tendon Layout Schematic.

STAGE IV
No Scale

2. Cast Closure Segment in Span 2. Stress Bottom Slab Tension in Span 2 per Post-Tensioning Notes & Bottom Slab Tendon Layout Schematic. Remove temporary tower support after the first set of bottom slab tendons has been stressed.
3. Cast Form Travelers A and B from Pier 2 cantilevers. Stress Bottom Slab Tension in Pier Table Pier 2 cantilevers. Stress Bottom Slab Tension in closure segment and remove counterweights and remove form travelers A and B from Pier 2 cantilevers.
4. Cast Barriers and Railings.
5. Erect steel pedestrian bridge between EB & NB Bridges. See S-2.01 through S-2.
6. Place overlay.

STAGE V
No Scale

2. Cast Closure Segment in Span 3. Stress Bottom Slab Tension in Span 3 per Post-Tensioning Notes & Bottom Slab Tendon Layout Schematic. Remove temporary tower support after the first set of bottom slab tendons has been stressed.
3. Cast Form Traveler A at Pier 3 cantilevers. Stress Bottom Slab Tension in Pier Table Pier 3 cantilevers. Stress Bottom Slab Tension in closure segment and remove counterweights and remove Form Traveler A from Pier 3 cantilevers.
4. Cast Barriers and Railings.
5. Erect steel pedestrian bridge between EB & NB Bridges. See S-2.01 through S-2.
6. Place overlay.
MINIMUM CONSTRUCTION CLEARANCE ENVELOPE AT PIER 2, EB (NORMAL TO RAILROAD)

No Scale

Notes:
1. Pier 2, EB shown.
2. Pier 2 MB similar for applicable track locations.

MINIMUM CONSTRUCTION CLEARANCE ENVELOPE AT PIER 3, EB (NORMAL TO RAILROAD)

No Scale

Notes:
1. Pier 3, EB shown.
2. Pier 3 MB similar for applicable track locations.
GENERAL SHORING NOTES:
1. All dimensions are measured perpendicular to the Track.
2. Prior to commencing any work, the contractor shall submit for approval by the Railroad the proposed shoring as defined in the extent of the track protection shoring proposed. The contractor shall install the temporary shoring system per the approved plans. Design of the temporary shoring system to comply with GUIDELINES FOR TEMPORARY SHORING.
3. For excavations which encroach into Zone A or B, shoring plans shall be accompanied by design calculations. Plans and calculations must be signed and stamped by a Professional Engineer licensed in the state of Arizona.
4. Railroad review and approval of shoring erection, demolition, and removal is required. Allow a minimum of four weeks for the review and approval of each submittal.
5. The proposed grade separation project shall not increase the ground profile above the level of the Railroad's ditches and/or drainage structures.
6. All shoring systems that impact the Railroad's operations and/or support the Railroad's embankment shall be designed and constructed per current Railroad Guidelines for Temporary Shoring.
7. All shoring systems that impact the Railroad's operations and/or support the Railroad's embankment shall be designed and constructed per current Railroad Guidelines for Temporary Shoring.
8. All dimensions within the Railroad's right-of-way and/or excavation that may impact the Railroad's Tracks or structures shall be in compliance with the Railroad's Demolition Guidelines.
9. Erection over the Railroad's right-of-way shall be designed to cause no interruption to the Railroad's operations, enabling the tracks to remain open to traffic per the Railroad's requirements.
10. All construction phasing that may impact the Railroad's operations shall be designed to cause no interruption to the Railroad's operation, enabling the tracks to remain open to traffic per the Railroad's requirements.
11. Falsework required to construct the superstructure adjacent to and above tracks shall be in accordance with Railroad requirements and shall be submitted to the Railroad for review and approval prior to installation of falsework.
12. Top of temporary tower support foundation shall be constructed to an elevation a minimum of 6'-0" below final grade in accordance with railroad requirements.
13. Contractor shall coordinate construction of Piers and temporary tower supports with the Railroad. The yard road maintenance clearances shall be maintained at all times. See Superstructure Construction UPRR Clearances for temporary tower support, shoring shall be removed and excavation shall be backfilled properly with material matching that removed.
14. All permanent clearances and shoring shall be maintained at all times. See Superstructure Construction UPRR Clearances for temporary tower support, shoring shall be removed and excavation shall be backfilled properly with material matching that removed.
15. Additional information for construction within the Railroad area is included in the Project Specifications and can be obtained from:
   - UPRR/BNSF - Guidelines for Temporary Shoring
   - UPRR/BNSF - Guidelines for Temporary Shoring, Demolition, and Removal Plan for Structures over Railroad
   - UPRR/BNSF - Guidelines for Railroad Grade Separation Projects
16. Any additional excavation and shoring required at the Plans to facilitate construction and/or removal, including the construction of tower support and tower structures, shall be considered incidental to Structural Excavation, Structure Demolition, and Removal. Upon removal of temporary tower support, shoring shall be removed and excavation shall be backfilled properly with material matching that removed.
17. The Contractor shall provide a minimum of one foot-candle for temporary lighting to any area shaded by the construction. Temporary lighting shall remain in place as required until such time as permanent lighting is installed.
18. The Contractor shall coordinate construction of Piers and temporary tower supports with the Railroad. The yard road maintenance clearances shall be maintained at all times. See Superstructure Construction UPRR Clearances for temporary tower support, shoring shall be removed and excavation shall be backfilled properly with material matching that removed.
19. All construction phasing that may impact the Railroad's operations shall be designed to cause no interruption to the Railroad's operations, enabling the tracks to remain open to traffic per the Railroad's requirements.
20. All construction phasing that may impact the Railroad's operations shall be designed to cause no interruption to the Railroad's operation, enabling the tracks to remain open to traffic per the Railroad's requirements.
21. Top of temporary tower support foundation shall be constructed to an elevation a minimum of 6'-0" below final grade in accordance with railroad requirements.
22. Contractor shall coordinate construction of Piers and temporary tower supports with the Railroad. The yard road maintenance clearances shall be maintained at all times. See Superstructure Construction UPRR Clearances for temporary tower support, shoring shall be removed and excavation shall be backfilled properly with material matching that removed.
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   - UPRR/BNSF - Guidelines for Temporary Shoring
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**ELEVATION (EASTBOUND SHOWN, WESTBOUND SIMILAR)**

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**NOTES**

1. Horizontal and vertical clearances are from track and top of rail, respectively. For temporary clearances required during construction, see Superstructure Construction UPRR Clearances and Construction Over Railroad Notes drawings.
2. Top of rail elevations shown shall be field verified. Any discrepancies shall be brought to the attention of the Railroad.
3. Railroad Milepost = 985.70 Gila Subdivision.

**Drainage Notes**

No drainage from the Structure will be discharged onto UPRR Right-of-Way.
Bridge Removal

1. The Contractor shall verify the existing conditions prior to beginning the project. Utility information shown on the plans may not accurately depict all facilities within the facilities shown. The Contractor shall coordinate the location of all existing and abandoned utilities with the project plans and notify respective owners before commencing the work of excavation. Conflicts shall be brought to the attention of the Engineer and resolved prior to proceeding with the work. See approximate utility locations.

2. The Contractor shall submit a plan showing the proposed method and sequence of removal for review and approval by the Engineer prior to demolition. See Special Provisions, Item 2020002 for removal of Bridge requirements.

3. The Contractor shall verify existing As-Builts for bridge details. See Special Provisions, Attachment C. Existing Bridge is City of Tucson East 22nd St. Overpass, Structure #51, and is comprised of a separate EB and WB Structure.

4. Dimensions and elevations of existing structure are based on As-Built Plans.

5. The Contractor shall be responsible for verifying all existing dimensions, locations of conflicts with new structure foundations, etc., Stations and Elevations prior to proceeding with the work.

6. Demolition must comply with UPRR Guidelines and no demolition shall take place over the railroad tracks without approval of UPRR.

7. See Construction Phasing Plans and Traffic Plans for maintenance of traffic.

8. Contractor shall be responsible for temporary grading as required, see temporary shoring notes on S-1.

9. For backfill requirements see Special Provisions.

ELEVATION - EXISTING BRIDGE

SUBSTRUCTURE REMOVAL KEYNOTES:

A. Remove substructure entirely for existing piers that conflict with new substructure.

B. Existing Pier at BAP Median.

C. Remove existing plot to 1'-0" below finished grade and replace with D.G.

All existing bridge substructure foundation to be removed as follows:

a) Within UPRR right-of-way, at least 3 feet below finished grade or at least 2 feet below base of rail, whichever is greater, unless otherwise specified by the Railroad.

b) Outside UPRR right-of-way, at least 2 feet below existing grade or 3 feet below finished grade, whichever is greater, unless otherwise specified in the Project Special Provisions.

DEPARTMENT OF TRANSPORTATION/ENGINEERING DIVISION

22ND STREET KINO PARKWAY TO TUCSON BOULEVARD

VEHICULAR BRIDGES

DATE I-2010-012

M A T C H L I N E S T A .5 7 + 0 0

Median Cst.

Aviation Pkwy.

Barraza-Aviation Pkwy.

Exist. Bridge to be removed

ELEVATION - EXISTING BRIDGE

1'-30"
**COLOR/MATERIAL PALETTE**

| Steel Tube | Prime and Paint to match TMS Manufacturing - WC Richards Co., aluminum
| Zinc rich 70% primer with Pittsburgh Paints PPG 90-477/05 or approved equal. |

| Bridge Deck and top of side of Barrier except traffic |
| All surfaces except traffic side of Barrier and top of Bridge Deck |

**FINISH SCHEDULE**

<table>
<thead>
<tr>
<th>Notes</th>
</tr>
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<tbody>
<tr>
<td>Painted C.I.P. Concrete Box and C.I.P. Piers with Form-lines - Paint to match Pittsburgh Paints PPG 90-477/05 or approved equal.</td>
</tr>
<tr>
<td>Painted C.I.P. Concrete Blockout Wells, Rinse, Roadway Ditching Wells and Traffic Barrier - Paint to match Pittsburgh Paints PPG 505-6 Birch Forest or approved equal.</td>
</tr>
</tbody>
</table>

**NOTES**

- Chamfered Formline recesses
- Formline - Paint Box and C.I.P. Piers
- Typical Intersection Detail

**Bridge Architecture - 2**

DEPARTMENT OF TRANSPORTATION/ENGINEERING DIVISION

22ND STREET KING PARKWAY TO TUCSON BOULEVARD VEHICULAR BRIDGES

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**FINISH SCHEDULE**

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DEPARTMENT OF TRANSPORTATION/ENGINEERING DIVISION

22ND STREET KING PARKWAY TO TUCSON BOULEVARD VEHICULAR BRIDGES

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DEPARTMENT OF TRANSPORTATION/ENGINEERING DIVISION

22ND STREET KING PARKWAY TO TUCSON BOULEVARD VEHICULAR BRIDGES

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DEPARTMENT OF TRANSPORTATION/ENGINEERING DIVISION

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**Bridge Architecture - 2**

DEPARTMENT OF TRANSPORTATION/ENGINEERING DIVISION

22ND STREET KING PARKWAY TO TUCSON BOULEVARD VEHICULAR BRIDGES
REMOVAL NOTES:
1. Existing bridge foundations to be completely removed where conflict occurs between the new spread footing or drilled shafts or drilled shaft caps and the existing foundations, See Bridge Removal S-1 for details.
2. See applicable plans for information on existing and new utilities.
3. Contractor shall be responsible for temporary shoring as required. See temporary shoring notes.

FOUNDATION NOTES:
1. *XX* indicates bottom of footing elevation.
2. The factored net bearing resistance at Abutment 1 is 6,133 ksf and at Abutment 2 is 5,384 ksf. See Project Section Report prepared by SCE Engineering dated August 4, 2017 for subgrade preparation.
3. Contractor is responsible for the design of the temporary support foundations, See Superstructure Construction Notes and Construction Sequence drawings. Temporary support foundations to be removed as follows:
   a) Spread Footing @ Piers
      The temporary support shall be removed as follows:
      - At least 3 feet below finished grade or at least 2 feet below base of rail, whichever is greater, unless otherwise specified by the Railroad.
      - At least 2 feet below existing grade or 3 feet below finished grade, whichever is greater, unless otherwise specified in the Project Special Provisions.
     b) Drilled Shaft Cap
     c) Retaining Wall Footing
5. See S-1,17 for Retaining Wall Footing details.

TEMPORARY SHORING NOTES:
1. The Contractor shall be responsible for providing temporary shoring as required to maintain traffic, to protect utilities, for protection of workers, or as otherwise needed to accomplish the work. Shoring shall conform to the design and construction specifications in the General Notes and in accordance with current Railroad Guidelines for temporary shoring. For shoring systems that impact the Railroad operations and/or support the Railroad embankment, see also S-1,12.
2. Contractor to submit plan outlining construction procedures and shoring systems that impact traffic, utilities, or embankment for review and approval prior to proceeding with construction. See Temporary Shoring Notes and Special Provisions for additional information.
3. Payment for temporary shoring shall be incidental to the structural excavation.
**DRILLED SHAFT SCHEDULE**

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<td></td>
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<td>96</td>
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<td>WS</td>
<td></td>
<td>10&quot;</td>
<td>91</td>
<td>2438</td>
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<td>10&quot;</td>
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<td>2444</td>
<td>2353</td>
<td>5610</td>
<td>5800</td>
<td>5800</td>
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**Notes:**
1. See Notes on Drawing S-1,8.

**THE LOCATION OF ALL UTILITIES IS APPROXIMATE ONLY; LOCATION SHOWN REFLECT THE FINDINGS OF THE LATEST AVAILABLE MAPPING.**

---

**Foundation Plan**

**Foundation Layout - 2**

**DEPARTMENT OF TRANSPORTATION/ENGINEERING DIVISION**

**22ND STREET KING PARKWAY TO TUCSON BOULEVARD VEHICLE BRIDGES**

**Preliminary Review**

Not for Construction or Recording June 2018

**City of Tucson**
DRILLED SHAFT NOTES

1. The geotechnical and foundation designs are based on Project Geotechnical Report, prepared by SCE Engineering, dated 08/04/2017.

2. The installation of the drilled shaft foundations shall be in accordance with Section 609 of the Standard Specifications and Special Provisions.

3. Placement of reinforcing cage shall be placed in the drilled shaft within 2 hours after the shaft bottom has been cleaned. Placement of drilled shaft concrete shall commence within 2 hours after placement of the reinforcing cage.

4. There shall be at least 48 hours between concrete placement of adjacent drilled shafts.

5. The Contractor may select any one of the drilled shafts as the required confirmation shaft.

6. Construction joints not shown on the project plans will require the approval of the Engineer prior to construction.

7. Contractor shall provide temporary steel casing as required to stabilize foundation materials during construction, surface sloughing or a overspill, aid in alignment of shafts, and ensure personnel safety. See Project Geotechnical Report for additional requirements.

8. For integrity testing, inspection tube quantity, size, type, and detail shall be per Section 609 of the Standard Specifications and Special Provisions.

9. Tubes for integrity testing of drilled shafts shall be placed as shown in viewpoint above shaft, at horizontal. Tubes to have the cone tip and bottom end attached to spirals by a connection to vertical reinf. See Standard Specifications and Project Special Provisions.

10. The grinding of the test tubes, after integrity testing, shall be done only after receiving Engineer approval.

11. Provide 1.5 extra turns of spiral bar at each end of the spiral unit.

12. Stagger lap splices such that no more than one half of vertical bars are lap spliced at any location. Stagger splices (1/4" min.), see Drilled Shaft details for lap splice length. Modifications to lap splice shall be approved by the Engineer.
Plan and Elevation

**Notes**
1. For Abutment Notes, See Sheet S-1.22.

**Abbreviations**
- SLB: Slab Seat
- AM: Approach Slab
- Brg.: Bridge
- SD: Shoulder Drain
- Ref.: Reference
- N°: Degrees
- ' = Inches
- @: At
- **: Denotes Elevation @ End Bearing
- *: Denotes Backwall
- "p: per foot
- (W): Weep Hole
- 3": 3 inches
- **: Denotes Elevation @ End Bridge
- #: Number
- ft.: Feet
- **: Denotes Elevation @ End Bearing

**Sections**
- Approach Slab Seat
- Shoulder Drain
- Abutment Slab Seat
- Shoulder Drain

**Dimensions**
- EB Elevation: 2480.80
- EB Elevation: 2480.62
- EB Elevation: 2482.95
- EB Elevation: 2482.87
- EB Elevation: 2483.85
- EB Elevation: 2456.50
- EB Elevation: 2480.80
- EB Elevation: 2480.62

**Materials**
- Bituminous Jt. Filler
- Filter Fabric
- Geocomposite Drain Material
- Schedule 40 PVC Sleeve

**Construction**
- Call for the Blue Stakes
- Two working days before you dig
Note:

see Abut Diaphragm with "hardboard Expanded polystyrene lap w/ #9 @ 12"

Abutment Details - 2

PARTIAL ELEVATION AT #8 ABUT. 2 (SOUTH SIDE)

Limits of overexcavation, See Geotech Report

Lap #6 @ 12" with #9 < 1/2 (See S-1.25 for lap length)

Rein. Footing

Typ. min., 1!0"

Cst. Joint

Mechanical Couplers

Mechanical Couplers

Cst. Jt.

Couplers

Mechanical

Cst. Jt.

Couplers

Mechanical

Cst. Jt.

Couplers

Mechanical

Cst. Jt.

Couplers

Mechanical

Cst. Jt.

Couplers

Mechanical

Cst. Jt.

Couplers

Mechanical

Cst. Jt.

Couplers

Mechanical

Cst. Jt.

Couplers

Mechanical

Cst. Jt.

Couplers

Mechanical

Cst. Jt.

Couplers

Mechanical

Cst. Jt.

Couplers

Mechanical

Cst. Jt.

Couplers

Mechanical

Cst. Jt.

Couplers

Mechanical

Cst. Jt.

Couplers

Mechanical

Cst. Jt.

Couplers

Mechanical

Cst. Jt.

Couplers

Mechanical

Cst. Jt.

Couplers

Mechanical

Cst. Jt.

Couplers

Mechanical

Cst. Jt.

Couplers

Mechanical

Cst. Jt.

Couplers

Mechanical

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Couplers

Mechanical

Cst. Jt.

Couplers

Mechanical

Cst. Jt.

Couplers

Mechanical

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Couplers

Mechanical

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Couplers

Mechanical

Cst. Jt.

Couplers

Mechanical

Cst. Jt.

Couplers

Mechanical

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Couplers

Mechanical

Cst. Jt.

Couplers

Mechanical

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Couplers

Mechanical

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Couplers

Mechanical

Cst. Jt.

Couplers

Mechanical

Cst. Jt.

Couplers

Mechanical

Cst. Jt.
Longitudinal and Transverse Pier Details - Piers 1 thru 3

Typical Pier Reinforcement at Piers 1, 2 & 3 (EB Shown, WB Similar)

Note:
1. Underdeck lighting conduit routed up & Pier 1 EB & WB, see also T-7.12.
2. Pier 1 (EB & WB), see also T-7.12.
3. Pier 3 WB only

For Pier Table refer embedded into Pier. See S-1.21 & Pier 3 WB only

Typical Pier Data

EB Pier Column Data

<table>
<thead>
<tr>
<th>Pier</th>
<th>H (ft.)</th>
<th>T (ft.)</th>
<th>L (ft.)</th>
<th>Elev.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>21.54</td>
<td>11.71</td>
<td>4.71</td>
<td>2472.72</td>
</tr>
<tr>
<td>2</td>
<td>25.83</td>
<td>10.66</td>
<td>3.24</td>
<td>2480.48</td>
</tr>
</tbody>
</table>

Notes:
- Underdeck lighting conduit routed up & Pier 1 EB & WB, see also T-7.12.
- Pier 1 (EB & WB), see also T-7.12.
- Pier 3 WB only

Drilled Shaft Cap

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LONGITUDINAL

TRANSVERSE

TYPICAL PIER REINFORCEMENT AT PIER 4 (EB SHOWN, WB SIM.)

#11, Typ.
Drilled Shaft Cap

Level

Finish Grade, varies

Drilled Shaft Cap

#9 x 1, Typ.

Pier Details - Pier 4

Pier Column Data

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<tr>
<th>Pier</th>
<th>H (ft.)</th>
<th>T (ft.)</th>
<th>L (ft.)</th>
<th>* E elev.</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>24.45</td>
<td>13.26</td>
<td>5.60</td>
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<thead>
<tr>
<th>Pier</th>
<th>H (ft.)</th>
<th>T (ft.)</th>
<th>L (ft.)</th>
<th>* E elev.</th>
</tr>
</thead>
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<td>4</td>
<td>21.72</td>
<td>13.92</td>
<td>5.67</td>
<td>2475.31</td>
</tr>
</tbody>
</table>

* Pier Elevation allows for 1/4-ft. between bottom of girder and bearing seat. E Elev. shall be adjusted to account for actual bearing assembly thickness.
Immediate Two working days before you dig. CALL FOR THE BLUE STAKES Blue Stake Center CALL COLLECT STAKE-IT 1-800-669-1166 3/8-3" SEE S-1.

NOTES:
1. Work this drawing with Section Dimensions - 1, drawing B-1.
2. For location of Ripped Plg & See Sheets S-2 & 3.
3. For location of Pier 3 supported Hanger Embed Plg. See S-1.
4. For size and location of conduit and underdeck lighting, see T-7.

See Note 2, Typ.
See Note 4
See S-1.
See Note 3

Elev @ Box Girder

Span No.

Joint No.

Segment No.

See Note 4

See S-1.

See Note 4, Typ.

See S-1.

Span & Segment Layout 3 (EB) 22ND STREET KINO PARKWAY TO TUCSON BOULEVARD VEHICULAR BRIDGES 06/18/18 1:20 PM

DEPARTMENT OF TRANSPORTATION/ENGINEERING DIVISION
2481
22ND STREET KINO PARKWAY TO TUCSON BOULEVARD VEHICULAR BRIDGES

Notes:
Elevations are at top of overlay.

Elev @ Box Girder

Span No.

Joint No.

Segment No.

See Note 4

See S-1.

See Note 4, Typ.

See S-1.

Span & Segment Layout 3 (EB) 22ND STREET KINO PARKWAY TO TUCSON BOULEVARD VEHICULAR BRIDGES 06/18/18 1:20 PM

DEPARTMENT OF TRANSPORTATION/ENGINEERING DIVISION
2481
22ND STREET KINO PARKWAY TO TUCSON BOULEVARD VEHICULAR BRIDGES

Notes:
Elevations are at top of overlay.
Elevations are at top of overlay.

* Measured along LT Median PGL.
**Notes:**

1. Work this drawing with Section Dimensions - 1 drawing, S-1.19.
2. For location of Hanger Embed E, see Sheets S-2.14 & S-2.15.
3. For location of Pier End Deck Supported Brdg, see S-2.21.
4. For size and location of conduit and underdeck lighting, see T-7.12.

**Elevations:**

- Elevations are at top of overlay.

**Span & Segment Layout 2 (WB)**

**Plan No.**

- 22nd Cst.
- Lt. Median PGL
- Lt. PGL Elev
- Elev & Box Girder
- Pier 2 (WB)
- See S-1.35

**Elevations: & Box Girder**

- E Lev: 1892.17, 1892.32, 1892.79, 1893.24, 1893.67, 1894.09, 1894.48, 1894.85, 1895.21, 1895.56, 1895.86, 1896.35, 1896.76, 1897.11, 1897.47, 1897.80.

**Edge of Top Slab**

- Edge of Top Slab
- Pier 2 (WB)
- Box Girder

**Joint No.**

- Joint No. (Typ.)

**Section No.**

- Section No. (Typ.)

**Notes:**

- See S-1.35

**Note:** Elevations are at top of overlay.
1. Work this drawing with Section Dimensions - 1 drawing, S-1.10.
2. For location of Hanger Embed P. See Sheets S-2.4 & S-2.8.
3. For size and location of conduit and underdeck lighting, See T-7.12.
4. For location of Box Girder, See S-1.

Notes: Elevations are at top of overlay.
TABLE OF VARIABLE DIMENSIONS

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<td>9'10&quot;</td>
<td>12'10&quot;</td>
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<tr>
<td>T</td>
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<td>21'3&quot;</td>
<td>18'10&quot;</td>
<td>20'4&quot;</td>
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<td>18'10&quot;</td>
<td>20'4&quot;</td>
<td>16'0&quot;</td>
<td>21'4&quot;</td>
<td>18'10&quot;</td>
</tr>
</tbody>
</table>

Notes:
1. * measured along true horizontal.
2. See Association of Bridge Details for additional dimensions at the abutment diaphragm.
3. See Abutment Diaphragm Details for additional dimensions at the abutment diaphragm.
4. Eastbound Bridge shown, Westbound Bridge similar.

Contour lines showing transition of bottom slab form as thickness increases toward piers.

Varies for Tc<152")

for Tc<152") bottom slab is flat.
Pour Notes:

1. Numbers 1 & 2 indicate placing sequence of bottom slab, girder web and diaphragm concrete.
2. Numbers 3 & 4 indicate placing sequence of top slab.
3. There shall be a 12 hour minimum interval between adjacent pours.
4. Sections 3 & 4 may be poured consecutively but only in the direction from 3 to 4 and a minimum of 12 hours after the adjacent section 3 has been poured.
5. Transverse deck prestressing to be completed before any formwork removal for that portion.
6. Longitudinal prestressing only after all transverse prestressing is complete and before main falsework is removed.
7. The Contractor shall submit a Pour Schedule to the Engineer for approval prior to placing concrete.
Pier Table Reinf. - 1

#5 x 10 @ 6"

#10 x 10 @ 6"

#5 x 10 @ 6"

Note:

24" @ 0"

16" @ 0"

Bar A

Bar B

SECTION...

"=1 @ 0"

For typical Deck and Bottom Slab reinf. see Segment Reinforcement drawing.

For Bar A and Bar B see Segment Reinforcement drawing.

Embed 2 @ 6"

To miss #9

Bend #5 as needed to miss #9

Typ. Bottom Slab reinf.

Typ. Deck reinf.

Transverse Tendon, Typ.

4 Layers

3 Layers

5 Layers

2 spa. @ 6"

Tendon, Typ.

9"

2 spa. @ 3"

4 spa. @ 6"

5"

#5 x 12", Typ.

#9 x 12";

Typ. Deck reinf.

#10 x 12", Typ.

5-#9 @ 330"

5-#9 x 330"

2 con. e 3"

10-#9 x 3"

10-#10 x 3"

6-#9 x 12"

4-#5 x 12"

Bend #5 as needed to miss #9

4 Layers

3 Layers

5 Layers

2 spa. @ 6"

Typ. Deck reinf.

#9 x 12";

Typ. Bottom Slab reinf.

#10 x 12", Typ.

5-#9 @ 330"

5-#9 x 330"

2 con. e 3"

10-#9 x 3"

10-#10 x 3"

6-#9 x 12"

4-#5 x 12"

Bend #5 as needed to miss #9

4 Layers

3 Layers

5 Layers

2 spa. @ 6"

Typ. Deck reinf.

#9 x 12";

Typ. Bottom Slab reinf.

#10 x 12", Typ.

5-#9 @ 330"

5-#9 x 330"

2 con. e 3"

10-#9 x 3"

10-#10 x 3"

6-#9 x 12"

4-#5 x 12"

Bend #5 as needed to miss #9

4 Layers

3 Layers

5 Layers

2 spa. @ 6"

Typ. Deck reinf.

#9 x 12";

Typ. Bottom Slab reinf.

#10 x 12", Typ.

5-#9 @ 330"

5-#9 x 330"

2 con. e 3"

10-#9 x 3"

10-#10 x 3"

6-#9 x 12"

4-#5 x 12"

Bend #5 as needed to miss #9

4 Layers

3 Layers

5 Layers

2 spa. @ 6"

Typ. Deck reinf.

#9 x 12";

Typ. Bottom Slab reinf.

#10 x 12", Typ.

5-#9 @ 330"

5-#9 x 330"

2 con. e 3"

10-#9 x 3"

10-#10 x 3"

6-#9 x 12"

4-#5 x 12"

Bend #5 as needed to miss #9

4 Layers

3 Layers

5 Layers

2 spa. @ 6"

Typ. Deck reinf.

#9 x 12";

Typ. Bottom Slab reinf.

#10 x 12", Typ.

5-#9 @ 330"

5-#9 x 330"

2 con. e 3"

10-#9 x 3"

10-#10 x 3"

6-#9 x 12"

4-#5 x 12"

Bend #5 as needed to miss #9

4 Layers

3 Layers

5 Layers

2 spa. @ 6"

Typ. Deck reinf.

#9 x 12";

Typ. Bottom Slab reinf.

#10 x 12", Typ.

5-#9 @ 330"

5-#9 x 330"

2 con. e 3"

10-#9 x 3"

10-#10 x 3"

6-#9 x 12"

4-#5 x 12"

Bend #5 as needed to miss #9
Future Post-Tensioning Steel Pipes, Typ. See Future Post-Tensioning Details - S-1.3 through S-1.33 for size, location and additional reinforcement.

Pier Column for Pier Table reinf., symmetrical about E Pier Table.

A Pier Table reinf., symmetrical about E Pier Table.

Transverse tendon, Typ.

Note: Typ. Deck reinf. not shown.

SECTION

Notes: Typ. Deck reinf. not shown.

2'-6" embedment

Pier Column, Pel Pier Table See S-1.28

Typ. Deck reinf. not shown.
Pier Table Rein. - 3

Future Post-Tensioning Steel Pipes, Typ. See Future Post-Tensioning Details - S-1. through S-1. for size, location and additional reinforcement.

Notes:
- Typ. Deck reins. not shown.
- Pier Column, for Pier Table reins. symmetrical.
SECTION

Pier 4 Diaphragm & Box Girder

Transverse Tendon, Typ.

Note:
Pedestrian Bridge Plans (Typ.)
and location at Pier 4, WB Bridge, see Pedestrian Bridge Plans (Typ.).

For Pedestrian Bridge connection details and location at Pier 4, WB Bridge, see Pedestrian Bridge Plans (Typ.).

Measured normal to web

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June 2018

June 2018
3½" dia. steel pipe opening for possible future post-tensioning, Typ.

Notes:
Top deck rein. not shown.

Top Web rein.

Notes:
Typ. Web rein. not shown.

Typ. Deck rein.

Notes:
Typ. Deck and Bottom Slab rein., see Segment Reinforcement drawing.

Typ. Web rein.

Notes:
Typ. Web rein. not shown.

Typ. Web rein. not shown.

Notes:
Typ. Web rein. not shown.
Diaphragm Details

Abutment

* measured normal to sloped web

SECTION 1:10

E Abutment Diaphragm & Box Girder

Blockout for MEJ

6" Expanded Polystyrene w/ 1/4" Nerdboard

for MEJ Blockout

Hardboard

Polystyrene w/
6" Expanded

2!0"

4"

2!0"

4"

2!0"

1!4"

2!0"

1!4"

1!4"

2!0"

1!4"

2!0"

1!4"

2!0"

1!4"

2!0"

1!4"

To sloped web

* measured normal to sloped web

SECTION 1:10

Vehicular Bridges

22ND STREET KING PARKWAY TO TUCSON BOULEVARD

PRELIMINARY

Preliminary Review

Net for Construction or Recording

June 2018

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CITY OF TUCSON

6/15/2018 10:36:07 AM
Notes:
1. Blockout dimensions for post-tensioning shall be determined by the Contractor and subject to the approval of the Engineer.
2. Reinforcement in area ahead of anchorage ("local zone") is the responsibility of the anchorage device supplier.
3. Reinforcement may be moved if in conflict with anchorage device or post-tensioning ducts subject to approval of the Engineer.

Notes Transverse tendons not shown.
Notes:

1. Typical Section shown is looking west at EB Bridge, WB Bridge opposite hand.
2. Work this drawing with Top Slab Tendon Details and Bottom Slab Tendon Layout.
3. Dimensions shown are parallel to slope of box.

SECTION No Scale

TYPICAL SECTION

Near Plan

In Span

Bulkhead Details

No Scale

Bulkhead Face
ELEVATION
\[ \theta = 10^\circ \]

Segment Closure

PLAN
\[ \theta = 10^\circ \]

Transverse Longitudinal

Tendon Details drawing.

1. For spacing of Tendons and Work Point (WP), see Bulkhead details drawing.

2. Tendons are symmetrical about % Box Girder.

3. Minimum horizontal radius shall be 2000.

4. Mark this drawing with Tab Slab Tendon Details drawing.

Notes:

Legend:

- Pier No.
- Tendon Mark
- Tendon Type

Dead End
Jacking End

Top Slab
Tendon Layout

Legend:

\[ \theta = 10^\circ \] Longitudinal
\[ \theta = 10^\circ \] Transverse

Notes:

1. For spacing of Tendons and Work Point (WP), see Bulkhead details drawing.

2. Tendons are symmetrical about % Box Girder.

3. Minimum horizontal radius shall be 2000.

4. Mark this drawing with Tab Slab Tendon Details drawing.

Legends:

- Pier No.
- Tendon Mark
- Tendon Type

Legend:

- Jacking End
- Dead End

Tendon No. of Strands

<table>
<thead>
<tr>
<th>Pier No.</th>
<th>Tendon Mark</th>
<th>Tendon Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>P1-TS-1</td>
<td>14</td>
<td></td>
</tr>
<tr>
<td>P1-TS-2</td>
<td>14</td>
<td></td>
</tr>
<tr>
<td>P1-TS-3</td>
<td>14</td>
<td></td>
</tr>
<tr>
<td>P1-TS-4</td>
<td>14</td>
<td></td>
</tr>
<tr>
<td>P1-TS-5</td>
<td>14</td>
<td></td>
</tr>
<tr>
<td>P1-TS-6</td>
<td>14</td>
<td></td>
</tr>
<tr>
<td>P1-TS-7</td>
<td>14</td>
<td></td>
</tr>
<tr>
<td>P1-TS-8</td>
<td>14</td>
<td></td>
</tr>
<tr>
<td>P1-TS-9</td>
<td>14</td>
<td></td>
</tr>
<tr>
<td>P1-TS-10</td>
<td>14</td>
<td></td>
</tr>
<tr>
<td>P1-TS-11</td>
<td>14</td>
<td></td>
</tr>
<tr>
<td>P1-TS-12</td>
<td>14</td>
<td></td>
</tr>
<tr>
<td>P1-TS-13</td>
<td>14</td>
<td></td>
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<tr>
<td>P1-TS-14</td>
<td>14</td>
<td></td>
</tr>
<tr>
<td>P1-TS-15</td>
<td>14</td>
<td></td>
</tr>
<tr>
<td>P1-TS-16</td>
<td>14</td>
<td></td>
</tr>
<tr>
<td>P1-TS-17</td>
<td>14</td>
<td></td>
</tr>
</tbody>
</table>
ELEVATION

Segment Closure

PLAN

Transverse

Longitudinal

Segment Closure

Legend:

1. For spacing of tendons and
2. Tendons are symmetrical about
3. Minimum horizontal radius shall be 3000
4. Work this drawing with Top Slab Tendon Details drawing.

Notes:

Dead End

Jacking End

Legend:

Dead End

Jacking End

Tendon Type

Tendon Mark

Pier No.

No. of Strands

Legend:

Dead End

Jacking End

Notes:

1. For spacing of tendons and
2. Tendons are symmetrical about
3. Minimum horizontal radius shall be 3000
4. Work this drawing with Top Slab Tendon Details drawing.

Notes:

Dead End

Jacking End

Legend:

Dead End

Jacking End

Tendon Type

Tendon Mark

Pier No.

No. of Strands

Legend:

Dead End

Jacking End

Notes:

1. For spacing of tendons and
2. Tendons are symmetrical about
3. Minimum horizontal radius shall be 3000
4. Work this drawing with Top Slab Tendon Details drawing.
Elevation

Segment Closure

Plan

Transverse Longitudinal

Legend:

Dead End
Jacking End

No. of Strands

<table>
<thead>
<tr>
<th>Pier No.</th>
<th>Tendon Mark</th>
</tr>
</thead>
<tbody>
<tr>
<td>P3-TS-1</td>
<td>14</td>
</tr>
<tr>
<td>P3-TS-2</td>
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</tr>
<tr>
<td>P3-TS-3</td>
<td>14</td>
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<tr>
<td>P3-TS-4</td>
<td>14</td>
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<tr>
<td>P3-TS-5</td>
<td>14</td>
</tr>
<tr>
<td>P3-TS-6</td>
<td>14</td>
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<tr>
<td>P3-TS-7</td>
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<td>P3-TS-11</td>
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<td>P3-TS-12</td>
<td>14</td>
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<td>P3-TS-13</td>
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<tr>
<td>P3-TS-14</td>
<td>14</td>
</tr>
<tr>
<td>P3-TS-15</td>
<td>14</td>
</tr>
<tr>
<td>P3-TS-16</td>
<td>14</td>
</tr>
<tr>
<td>P3-TS-17</td>
<td>14</td>
</tr>
</tbody>
</table>

Notes:
1. For spacing of tendons and work point (WP), see bulkhead detail drawing.
2. Tendons are symmetrical about % Box Girder.
3. Minimum horizontal radius shall be 3040.
4. Work this drawing with Top Slab tendon detail drawing.
1. Tendons are symmetric about Box Girder.
2. Minimum horizontal radius shall be 30'-0".
3. For Anchorage Block details see Top Slab Anchorage Block Details (CIP Falsework - Spans 4 & 5) drawing.
Top Slab Tendon Details

Notes:
1. Work this drawing with Bulkhead Details drawing, S-1.02.
2. For typical rein. see Segment Reinforcement drawing.
3. For transverse post-tensioning details see Transverse Tendon Layout & Details drawing.
4. Dimensions shown are parallel to Top Slab.

SECTION NEAR PIERS 1, 2 & 3

Top Slab Tendons

- Slab Rein.
- Tendon Mark, Typ.
- Slab Reinf.
- Metal Duct, Typ.
- Anchor and Spiral for 15 x 0.6" diam. strands
- Anchor and Spiral for 5 x 0.6" diam. Spare Duct as needed
- Transverse Tendon Duct
- PT Anchorage
- Segment Joint

ELEV. - TENDON DEVIATION PROFILE

No Scale

Typical Segment

PC O A 0

Notes: Typical Top Slab Rein., not shown.

1/2" = 1'-0"

Top of Top Slab
Notes:
1. Force diagrams shown are for total force applied to whole box section.
2. Force diagrams show forces that include losses due to friction, anchor set and elastic shortening. Creep, shrinkage and relaxation losses are not included.
**Legend:**
- Dead End
- Jacking End
- Dead End

**Notes:**
1. For spacing of tendons and Work Point (WP) see Bulwark Details, S-1.
2. Tendons are symmetric about Box.
3. Minimum horizontal radius shall be 30'-0".
4. For anchorage block details see Bottom Slab Anchorage Block Details, S-1.
5. For anchorage in Abutment Diaphragm, see Abutment Diaphragm Reinforcement, S-1 & S-1.

---

**Tendon Details:**

<table>
<thead>
<tr>
<th>Span No.</th>
<th>Tendon Mark</th>
<th>Tendon Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-4</td>
<td>S1-BS-1</td>
<td></td>
</tr>
<tr>
<td>1-4</td>
<td>S1-BS-2</td>
<td></td>
</tr>
<tr>
<td>1-4</td>
<td>S1-BS-3</td>
<td></td>
</tr>
<tr>
<td>1-4</td>
<td>S1-BS-4</td>
<td></td>
</tr>
</tbody>
</table>

---

**Tendon Layout - 1**

**Bottom Slab**

**Section:** 22ND STREET KINO PARKWAY TO TUCSON BOULEVARD

**Veichicular Bridges**

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**June 2018**

**DEPARTMENT OF TRANSPORTATION/ENGINEERING DIVISION**

**PRELIMINARY 100% Review**

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**June 2018**

**22ND STREET KINO PARKWAY TO TUCSON BOULEVARD VEHICULAR BRIDGES**
Legends:
- Jacking End
- Dead End

Elevation
\[ \theta = 15^\circ \]

Edge of Bottom Slab

Plan
\[ \theta = 15^\circ \] Longitudinal
\[ \theta = 15^\circ \] Transverse

Notes:
1. For spacing of tendons see Bulkhead Details, S-1.
2. Tendons are symmetric about % Box Girder.
3. Minimum horizontal radius shall be 3048 m.
4. For anchorage block details see Bottom Slab Anchorage Block Details, S-1.

Section
\[ \theta = 15^\circ \]
Elevation

Span 3

Legend:
- Jacking End
- Dead End

Section

Plan

Legend:
- Span No.
- Tendon Mark
- Tendon Type

Notes:
1. For spacing of tendons see Bulkhead Details, S-1.
2. Tendons are symmetric about Box Girder.
3. Minimum horizontal radius shall be 30°.
4. For Anchorage Block details see Bottom Slab Anchorage Block Details, S-1.

Notes:

- Block Details, S-1.
- See Bottom Slab Anchorage
- Minimum horizontal radius shall be 30°.
- For Anchorage Block details see Bottom Slab Anchorage Block Details, S-1.

Legend:
- Dead End
- Jacking End

Table:

<table>
<thead>
<tr>
<th>Tendon</th>
<th>No. of Strands</th>
</tr>
</thead>
<tbody>
<tr>
<td>S3-BS-1</td>
<td>16</td>
</tr>
<tr>
<td>S3-BS-2</td>
<td>19</td>
</tr>
<tr>
<td>S3-BS-3</td>
<td>18</td>
</tr>
<tr>
<td>S3-BS-4</td>
<td>16</td>
</tr>
</tbody>
</table>

Notes:

- For spacing of tendons see Bulkhead Details, S-1.
- Tendons are symmetric about Box Girder.
- Minimum horizontal radius shall be 30°.
- For Anchorage Block details see Bottom Slab Anchorage Block Details, S-1.
Notes:
1. For spacing of tendons see Bulkhead Details, S-1.
2. Tendons are symmetric about % Box Girder.
3. Minimum horizontal radius shall be 30'0".
4. For Anchorage Block details see Bottom Slab Anchorage Block Details, S-1, 69.

Legend:
- Jacking End
- Dead End

Legend:
- Tendon Layout - 4
- Bottom Slab
- Tendon No. of Strands
- S4-BS-3
- S3-BS-1
- S3-BS-2
- S3-BS-3
- S3-BS-4
- S3-BS-5
- S3-BS-6
- Tendon Type
- Tendon Mark
- Span No.
1. Force diagrams shown are for total force applied to whole box section.

2. Force diagrams show forces that include losses due to friction, anchor set and elastic shortening. Creep, shrinkage and relaxation losses are not included.

Notes:

- Bottom Slab Tendons

**FORCE DIAGRAMS**

No Scale
NOTES:

1. All tendons are 4 x 0.6" diam. strand tendons.

2. Tendons shall be stressed after concrete has reached a strength of 3.5 ksi or greater if required by PT supplier.

3. Jacking force per Tendon = 176 k.

4. Tendons shall be single end jacked.

5. The jacking ends shall be alternated.

6. Tendons shall be placed perpendicular to Box Girder.

7. Tendons adjacent to Abutment shall be stressed initially to 50% and to 100% after expansion joint is set.

SEGMENT STRESSING SEQUENCE:

A. Stress transverse tendons to 100% of total jacking force except for tendon adjacent to free edge, stress tendon adjacent to free edge to 50% of total jacking force.

B. Stress longitudinal tendons.

C. Complete stressing of tendon adjacent to free edge after casting of next segment with minimum concrete strength of 3.5 ksi or greater if required by PT supplier.

LOCAL REINFORCEMENT:

- Transverse reinforcement shall be determined by PT supplier and shown in shop drawings.

- For location of inside 10" extension for Ped. Bridge supported on Deck, see Span & Segment Layout for accurate placement.

SPACING OF TRANSVERSE TENDONS

For insertion of inclusion:

- Tendons shall be spaced 24" apart max.
- See Note T
Transverse Tendon & Ped. Bridge Hanger Details

1. Location of embed plate shall be as shown in pedestrian bridge drawings.
2. Embed Plate can be moved 2" to clear tendon and local zone reinforcing.
3. Transverse Tendon location can be moved 2" to clear bolts for embed plate.

Note: Top slab reinf. not shown for clarity.
Ped. Bridge Brg. P Details

1. For additional information on location of bearing plates, See also Depts. 5-1.13 to 5-1.25.
2. Bearing plate bolts at intermediate support only can move 1" towards & clear transverse tendons.
3. Transverse tendon location can be moved 1" to clear bolts.
4. Anchor bolts shall be L-shaped and conform to the requirements of ASTM F1554, Grade 55, Galvanized per ASTM F2329.
5. The cost of bearing assembly per S-2.
6. Contractor shall survey vehicle bridge to determine elevations at location of pedestrian bridge bearings and submit to Engineer prior to determining total bearing assembly height.
7. PTFE (Polytetrafluoroethylene) Sheets shall be made from pure virgin PTFE resin and conform to the requirements of ASTM D4894 and D4895 and shall be Grout Pad x W x L, PTFE bonded to plate.

Bearing Plate for Ped. Bridge Notes:

1. 3" to 10" extension
2. 1½" diam. bolt
3. ½" x W x L. Grout Pad w/ PTFE bonded to plate
1. Typical slab and web reinforcement not shown.

2. For Tendon layout see Dept. S-1.125 to S-1.126.

3. Bend rebar after stressing operations are completed.

Notes:

Operations are completed.

Dwgs. S-1. to S-1.

2. For Tendon layout see

3. Bend rebar after stressing

For Tendon layout see Dept. S-1.125 to S-1.126.

3. Bend rebar after stressing operations are completed.
Notes:

1. Typical slab and web reinforcement not shown.
2. For Tendon layout see Dwgs. S-1.
3. Bend rebar after stressing operations are completed.
4. Anchor and spiral for 19 x 0.6" dia. strands.

Bottom Slab Anchorage
Block Details

SECTION - FORM
1' = 1" = 1'

SECTION - REINF.
1' = 1" = 1'

SECTION
1' = 1" = 1'

PARTIAL SECTION
1' = 1" = 1'

PARTIAL SECTION
1' = 1" = 1'

Bottom Slab Anchorage
Block Details

SECTION - FORM
1' = 1" = 1'

SECTION - REINF.
1' = 1" = 1'

SECTION
1' = 1" = 1'

PARTIAL SECTION
1' = 1" = 1'

PARTIAL SECTION
1' = 1" = 1'

Notes:

1. Typical slab and web reinforcement not shown.
2. For Tendon layout see Dwgs. S-1.
3. Bend rebar after stressing operations are completed.
4. Anchor and spiral for 19 x 0.6" dia. strands.
Notes:
1. All future post-tensioning ducts shall be 35/8" O.D. standard weight galvanized steel pipe, conforming to the requirements of ASTM A53, Type E, Grade B.
2. All future post-tensioning anchorages shall accommodate 12-0.6-diameter strands.
3. Local zone reinforcement to be determined by Contractor and included in shop drawings.
Notes:

1. For reinforcement see Future Post-Tensioning Details - 3 drawing.

<table>
<thead>
<tr>
<th>LOCATION</th>
<th>R3</th>
<th>R4</th>
<th>R5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pier 1 towards Span 1</td>
<td>48'</td>
<td>980'</td>
<td>-</td>
</tr>
<tr>
<td>Pier 2 towards Span 2</td>
<td>48'</td>
<td>980'</td>
<td>-</td>
</tr>
<tr>
<td>Pier 3 towards Span 3</td>
<td>48'</td>
<td>980'</td>
<td>-</td>
</tr>
<tr>
<td>Pier 1 towards Span 2</td>
<td>76'</td>
<td>-</td>
<td>1540'</td>
</tr>
<tr>
<td>Pier 2 towards Span 3</td>
<td>76'</td>
<td>-</td>
<td>1540'</td>
</tr>
<tr>
<td>Pier 3 towards Span 4</td>
<td>76'</td>
<td>-</td>
<td>1540'</td>
</tr>
</tbody>
</table>

SECTION

<table>
<thead>
<tr>
<th>LOCATION</th>
<th>°</th>
</tr>
</thead>
<tbody>
<tr>
<td>Towards Span 4</td>
<td>1480'</td>
</tr>
<tr>
<td>Towards Span 5</td>
<td>1480'</td>
</tr>
</tbody>
</table>

Future Post-Tensioning Details - 2
Future Notes:

1. For additional reinforcement in Pier Table Pier 1, Pier 2, and Pier 3, see Pier Table Reinforcing Drawings for Pier 1 and Pier 2. For additional reinforcement in Pier 3, see Pier 3 Reinforcing Drawing.
### Notes:
1. This drawing is a schematic of required bearing devices. Manufacturer is responsible for the design of the bearing devices. Shop drawings shall be submitted to the Engineer for review.
2. Bearing assemblies shall be constructed to permit removal for repair or replacement by vertically jacking the bridge from the abutments and pier 4 by PTFE maximum.
3. Grout shall be comprised of portland cement and silica sand. Minimum compressive strength shall be 6,000 psi at 28 days.
4. Number, size and spacing of shear connectors shall be determined by the bearing manufacturer.
5. PTFE- Polytetrafluoroethylene
6. Loads are from AASHTO LRFD load combinations.
7. Total contraction and total expansion movements include 1/2 factor per AASHTO LRFD Bridge Design Specifications.
8. The top plate, sole plate, and stainless steel sliding plate shall accommodate the contraction and expansion shown. The shop drawings shall show the proper installed position of these plates with respect to the pot and piston.
9. A 12° dimension has been assumed between the top of the abutment seats and the bottom of the abutment diagonal members. This number shall be adjusted to account for actual bearing and riser pad thicknesses while maintaining dimensions to limits shown.
10. An 15° dimension has been assumed between the top of Pier 4 seats and the bottom of Pier 4 diagonal members. This number shall be adjusted to account for actual bearing and riser pad thicknesses while maintaining dimensions to limits shown.

### Bearing Details
- **Top & Sole Plates**
  - Materials: Stainless Steel
  - Limits of Movement:
    - Vertical: 9°
    - Longitudinal Range of Movement:
      - Pier 4: 2360 in
      - Pier 4 or Abutment: 45°
    - Temp. Rise:
      - AASHTO LRFD
      - 5° F
      - 10° F
- **Shear Connectors**
  - Type: PTFE (See Note 4)
  - Number, size and spacing shall be determined by the bearing manufacturer.
- **Elastomer Rings**
  - Type: Stainless Steel (See Note 7)
  - Minimum compressive strength shall be 6,000 psi at 28 days.
- **Guide Bar**
  - Guide Bar & Direction of Movement
  - Stainless Steel, cont.

### Drawings
- **Typ. Section - Guided Bearing**
- **Typ. Section - Non-Guided Bearing**

### Specifications
- Shop drawings shall be submitted to the Engineer for review.
- Bearing shall provide a total rotational capacity of 0.017 radians. This capacity requirement includes the factored bearing rotation plus a fabrication and installation tolerance (0.005 radians) and an uncertainty tolerance of 0.005 radians.
- Loadings are from AASHTO LRFD Load Combinations.
- **Initial Offset, A (in)**
  - Pier 4: 2360 in
  - Pier 4 or Abutment: 45°

### City of Tucson
- 22ND STREET KINO PARKWAY TO TUCSON BOULEVARD
- PRELIMINARY DRAWING REVIEW:
  - 06-18
  - CHKD. BY:
  - DSGN. BY:
  - DRWN. BY:

---

**DEPARTMENT OF TRANSPORTATION/ENGINEERING DIVISION**
Notes:
1. Design of expansion joints shall be the responsibility of the Contractor.
2. Expansion joints shall conform to the Special Provision "Modular Expansion Joints."
3. Expansion joints may not be installed until the entire superstructure is completed except that the railings and overlay shall not be in place.
4. The joint opening shall be set in accordance with the table. The opening shall be adjusted in accordance with the temperature difference from 75° F (mean temperature).
5. Fill blockout with Class S concrete, F'c = 6000 psi. 
6. See abutment and abutment diaphragm reinforcing drawings for the reinforcing to be placed in the primary element pours that extend into the expansion joint blockout.
7. The Contractor shall modify the expansion joint blockout to suit the manufacturer's requirements, if required, with the approval of the Engineer.

Expansion Joint Details

75° F INITIAL SET 10° F INCREMENT MIN MAX
Abut.1 A 3⁄16" A+1/8" A+3/16"
Abut.2 A 3⁄16" A+1/8" A+3/16"
"A" depends on manufacturer
Max. = Minimum joint opening

Notes:
Max. = Maximum joint opening
Min. = Minimum joint opening
"A" Depends on manufacturer

JOINT

DEPARTMENT OF TRANSPORTATION/ENGINEERING DIVISION

22ND STREET KING PARKWAY TO TUCSON BOULEVARD
VEHICULAR BRIDGES

Preliminary 100% Review
Not for Construction or Recording
June 2018
Notes:
1. Structural steel shall be per ASTM A36.
2. Exposed surfaces shall be painted per Section 1002 of the Standard Specifications after fabrication. Color shall be selected and approved by the Engineer.
3. All items, including material and labor associated with segment access details, shall be incidental to the cost of the superstructure concrete.
**Notes:**

1. The upper 6" of the anchor bolts shall be treated.

2. Light pole Concrete Barrier Blister shall not be paid separately. Additional concrete and steel are considered incidental to the concrete barrier construction. No additional payment will be made for anchor bolts and associated hardware that is considered included in the cost of LF F-Shape Bridge Concrete Barrier and Transition (34") paid by LF.

3. Provide expansion coupling at all bridge expansion joints.

4. All bolts, nuts, washers and removable cover plate shall be galvanized in accordance with the requirements of ASTM A153.

5. Contractor to submit removable base cover detail for protection of anchor bolts & conduit to City of Tucson for review before construction. Cost of removable base cover, material required for installation and labor to install shall be incidental to Item No. 601114 & F-Shape Bridge Concrete Barrier and Transition (34") paid by LF.

**Additional Details:**

- Light pole Concrete Barrier Blister shall not be paid separately.
- Additional concrete and steel are considered incidental to the concrete barrier construction. No additional payment will be made for anchor bolts and associated hardware that is considered included in the cost of LF F-Shape Bridge Concrete Barrier and Transition (34") paid by LF.

**Miscellaneous Details:**

- Contractor to submit removable base cover detail for protection of anchor bolts & conduit to City of Tucson for review before construction. Cost of removable base cover, material required for installation and labor to install shall be incidental to Item No. 601140 F-Shape Bridge Concrete Barrier and Transition (34") paid by LF.

---

**Light Pole Concrete Barrier Blister:**

- The upper 6" of the anchor bolts shall be treated.

**Light Pole Concrete Barrier Transition:**

- Light pole Concrete Barrier Blister shall not be paid separately. Additional concrete and steel are considered incidental to the concrete barrier construction. No additional payment will be made for anchor bolts and associated hardware that is considered included in the cost of LF F-Shape Bridge Concrete Barrier and Transition (34") paid by LF.
1. General soil and rock (where encountered) strata descriptions and indicated boundaries are based on engineering interpretation of available subsurface information by the geotechnical engineer and may not reflect actual variation in subsurface conditions between borings and samples. The location of contacts between strata may be gradual rather than abrupt. Classification of soil material is in general accordance with ASTM D 2488-93 and is presented in the Geotechnical Report.

2. The observed water levels and/or moisture conditions indicated on the boring logs are as recorded at the time of field investigation. These water levels and/or moisture conditions may vary considerably with time according to the prevailing climate, rainfall or other factors and are otherwise dependent upon the duration of and methods used in the field investigation program.

3. Sound engineering judgment was exercised in preparing the subsurface information presented on these sheets. This information was prepared and is intended for design and estimating purposes. Its presentation on the plans or elsewhere is for the purpose of providing intended users with access to the same information as was provided to the City of Tucson and its designers. Interpretations of subsurface information are presented in good faith and are not intended as a substitute for personal investigation, independent interpretations or judgment of the contractor.

4. A 140 lb. hammer, 30-inch free-fall, was used to drive both the Standard Penetration Test (SPT) split-spoon sampler and the ring-lined sampler in general conformance with ASTM D 1586-96 and D 3500-01, respectively.

5. For further information, refer to SCE reports "Final Geotechnical Report - 22nd Street/Kino Parkway to Tucson Boulevard" submitted to AECOM and any Addenda.

6. Reaction to dilute HCl (as per ASTM D 2488) does not necessarily correlate to the degree of carbonate cementation. For example, a "strong" reaction to HCl and a low SPT-N value may indicate that the soil particles are coated with calcium carbonate or lime but the voids are mostly clear, i.e. the particles are not significantly cemented to each other, therefore, the density is loose. In other cases, soil may exhibit "no" to "weak" reaction to HCl but appear to be strongly cemented due to induration. Thus, the user should consider the reported reaction to HCl and SPT-N values in conjunction with other relevant factors to evaluate the degree of induration and its effect on construction activities.

7. Refusal SPT-N values may be indicative of the presence of cobbles or boulders whose size cannot be determined by the investigative techniques used for this project. Cobbles and boulders will likely be encountered during the construction of the drilled shafts. Additionally, cemented layers may form cobble or boulder size pieces when broken up. The contractor should mobilize the appropriate equipment for removing this material.

8. The site soils contain random zones of poorly graded and well graded sands and gravels. These soils may be prone to caving. Therefore, localized caving should be anticipated during drilled shaft construction. These local zones may be up to 20-ft thick and can occur at various depths.

9. The site soils contain random zones of gravels, cobbles and boulders. These materials experience large fluid loss during slurry-assisted drilled shaft construction.

**OTHER TERMINOLOGY**

<table>
<thead>
<tr>
<th>Quantity</th>
<th>Reaction to HCl</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trace</td>
<td>&lt; 5% No reaction</td>
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<tr>
<td>Few</td>
<td>5-10% Weak reaction</td>
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<tr>
<td>Little</td>
<td>15-25% Strong reaction</td>
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<tr>
<td>Some</td>
<td>30-45% Violent reaction</td>
</tr>
<tr>
<td>Mostly</td>
<td>&gt; 50%</td>
</tr>
</tbody>
</table>

---

**FOUNDATION DATA (VEHICULAR BRIDGE)**

**DEPARTMENT OF TRANSPORTATION/ENGINEERING DIVISION**

22nd Street: KINO PARKWAY TO TUCSON BOULEVARD

**Preliminary Design**

Net for Design of Recording

June 2008
### Boring Plan

**Scale:** 1" = 50' (at 22" x 34")

**Location:**
- **Boring Location:**
- **22nd Street: King Parkway to Tucson Boulevard**

**Foundation Data (Vehicular Bridge):**

- **SF - 102 of SF - 114**
- **Department of Transportation/Engineering Division**
- **City of Tucson**

**Preliminary**

- **Date of Recording:** June 2018
- **Recorded By:**
- **Not for Distribution**

### Boring Log, BNT 1:

<table>
<thead>
<tr>
<th>Date</th>
<th>Sample Type</th>
<th>Sample Location</th>
<th>Sample Description</th>
<th>Sample Length</th>
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</thead>
<tbody>
<tr>
<td>7/15/2013</td>
<td>2 and 3</td>
<td>2 and 3</td>
<td>Sample 1</td>
<td>2.0 ft</td>
</tr>
<tr>
<td>7/15/2013</td>
<td>2 and 3</td>
<td>2 and 3</td>
<td>Sample 2</td>
<td>2.0 ft</td>
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### Boring Log, BNT 2:

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<th>Sample Location</th>
<th>Sample Description</th>
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<td>2 and 3</td>
<td>2 and 3</td>
<td>Sample 1</td>
<td>2.0 ft</td>
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<tr>
<td>7/15/2013</td>
<td>2 and 3</td>
<td>2 and 3</td>
<td>Sample 2</td>
<td>2.0 ft</td>
</tr>
</tbody>
</table>

---

### Boring Location

- **Shore studies**

---

### Boring Plan

- **Location:**
- **22nd Street: King Parkway to Tucson Boulevard**

---

### Foundation Data (Vehicular Bridge)

- **SF - 102 of SF - 114**
- **Department of Transportation/Engineering Division**
- **City of Tucson**

**Preliminary**

- **Date of Recording:** June 2018
- **Recorded By:**
- **Not for Distribution**
A. SPECIFICATIONS


B. LOADS:

B1. Permanent Loads:

C1. Structural Steel Plates shall conform to the requirements of ASTM A572, Grade 50.

C2. Perforated Steel Plate:

D. MISCELLANEOUS NOTES:

D1. Dimensions shall be scaled from drawings.

D2. All dimensions are shown in inch-long and all elevations are shown in feet unless noted otherwise.

D3. Dimensions shown are top and side elevations of the top steel beam members to be TRF.

D4. Profile grade Reinforced Concrete planes are finished elevations of the top of concrete deck.

D5. Painting, Reinforced Steel, and Reinforced Concrete shall be painted in accordance with Project Special Provisions.
Head Clearance
8.13' @ Point of Min.

Plan & Elevation - 1 of 3

Notes:
1. See Sheet S-1.13 for track alignment and spacing.
2. Elevations are at the top of concrete deck at Ped.Bridge Cst.

Elevations are at top of concrete deck at Ped.Bridge Cst.

Notes:
1. See Sheet S-1.13 for track alignment and spacing.
2. Elevations are at the top of concrete deck at Ped.Bridge Cst.
TABLE 1 - DRILLED SHAFT SCHEDULE

<table>
<thead>
<tr>
<th>Drilled Shaft</th>
<th>Drilled Shaft Length (ft.)</th>
<th>Top Elev. (ft.)</th>
<th>Tip Elev. (ft.)</th>
<th>Load (kips)</th>
<th>Resistance (kips)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>48</td>
<td>29</td>
<td>2451.00</td>
<td>227</td>
<td>375</td>
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<tr>
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<td>48</td>
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<td>550</td>
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</tbody>
</table>

* See Table 2

DRILLED SHAFT NOTES


2. The installation of the Drilled Shaft Foundations shall be in accordance with Section 609 of the Standard Specifications & Special Provisions.

3. The reinforcing cage shall be placed in the drilled shaft within one hour after the drilled shaft bottom has been cleaned. The drilled shaft bottom shall be inspected immediately prior to lifting the cage and re-cleaned if deemed necessary by the Engineer.

4. Placement of drilled shaft concrete shall commence within 1 hour after placement of the reinforcing cage.

5. Construction joints not shown on the project plans will require the approval of the Engineer prior to construction.

6. A temporary surface casing is recommended to aid in the alignment of drilled shafts to ensure personal safety and to prevent sloughing or raveling. A minimum depth of 2 feet above the ground surface is recommended. The diameter of the surface casing shall not be more than 12 inches larger than the nominal diameter of the shaft.

7. For integrity testing, inspection tube quantity, size, type, and detail shall be per Section 609 of the Standard Specifications & Special Provisions.

8. Tubes for integrity testing of drilled shafts shall be placed as shown on the plans for depth to be within 5 feet of the bottom of the shaft. Tubes to have threaded cap at top end and bottom and be secure to attached to alternate ties (do not attach to vertical reinforcing). See Standard Specifications & Project Special Provisions.

9. The grouting of the test tubes, after integrity testing, shall be done only after re-inspecting Engineer approved.

10. Provide 3.5 extra turns of spiral bar at each end of the spiral unit where applicable.

11. For additional construction considerations for drilled shaft, see Final Geotechnical Report.

12. Splicing of vertical reinforcement shall only be allowed if approved by the Engineer.

TABLE 2 - BOTTOM OF CASING ELEV.

<table>
<thead>
<tr>
<th>Drilled Shaft</th>
<th>Bottom of Casing Elevation (ft.)</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>2449.40</td>
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</table>

Notes:

1. Bottom of casing elevation is equal to adjacent multi-use path elevation. If changes in multi-use path elevation occurs notify the Engineer.

2. Bottom of casing elevation is equal to adjacent channel elevation. If changes in channel elevation occurs notify the Engineer.

DRILLED SHAFT CASING DETAILS (FOR D.S. K, L & M)

- See Table 2

DEPARTMENT OF TRANSPORTATION/ENGINEERING DIVISION

22ND STREET KING PARKWAY TO TUCSON BOULEVARD PEDESTRIAN BRIDGE

PRELIMINARY 100% REVIEW

NOT FOR CONSTRUCTION OR RECORDING

JUNE 2018
PARTIAL DECK FRAMING PLAN (EAST SUSPENDED)

MANGER ROD TABLE (Each station requires a matched pair of rods)

<table>
<thead>
<tr>
<th>Rod No.</th>
<th>Sta. No.</th>
<th>Length (Ft.)</th>
<th>Rod No.</th>
<th>Sta. No.</th>
<th>Length (Ft.)</th>
<th>Rod No.</th>
<th>Sta. No.</th>
<th>Length (Ft.)</th>
<th>STM Ht (Ft.)</th>
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* Fracture Critical Members (FCM)
Typ. Deck Segment Framing - Plan & Elevation

Notes: Frame section on deck supported, similar without kink

* Fracture Critical Members (FCM) for Spans 1, 2, 3, 4, 6, 7, 8, 10, 11, 12, 13

Typ. Deck Segment Framing - Plan & Elevation

Date: June 2018

22ND STREET KING PARKWAY TO TUCSON BOULEVARD PEDESTRIAN BRIDGE

Department of Transportation/Engineering Division

Caltrans - I-2010-012

City of Tucson

Two working days before you dig.

CALL FOR THE BLUE STAKES

Blue Stake Center

CALL COLLECT

STAKE-IT 1-800-784-4893
Typ. Roof Segment Framing - Plan & Elevation

ELEVATION - TYP. ROOF SEGMENT FRAMING

Notes: Roof framing for typical deck supported segments is similar without clerestory/low roof.
Notes:
1. Ronstan Structural Rod Part No. ARS4-CSM30 or approved equal.
2. Ronstan Connection Plate to match Rod Part No. ARS4-CSM30 or approved equal.
3. Ronstan Toggle Connector Part No. S5156-M30 or approved equal.
4. All Connector Pins, Connection Hardware and Accessories by Ronstan to match Part Nos. ARS4-CSM30 components and S5156-M30 Components or approved equal.
5. For W Beam Details, see S-2 thru S-2.38.
**Typical Deck Section**

- Stay-in-Place metal decking shall conform to ASTM A586 (G90, galvanizing and shall be of a hot-dip process only).
- Stay-in-Place metal decking shall conform to Vulcraft A5022 with 0.019 in/ft or approved equal. At seams button punch 24# 0.30 in top seam weld 24# 0.30. Attach decking to floor beam with 7/4" puddle welds a 6" o.c.

**Notes**

1. Floor Beam tooled edges.
2. For 400' suspended section only, Typ.

**Typical Control Joist at Floor Beam**

**Typical Joint at Segment Ends**
Roof Section & Details

LONGITUDINAL ROOF SECTION

- Junction Box & Interior Lighting Conduit, See Lighting Plans & Details.
- Ambient Light Fixture, See Lighting Plans & Details. Mount tight to HSS6x6, Typ. each 40' section.

- High Roof
- Lower Arch
- Lower Deck Top of Ramp
- Lower Deck Bottom of Landing
- Pier H Beyond
- #10-24 Horizontal Run Under Deck
- Int. Lighting Conduit Path to Top of Structure, See Note 1 and Lighting Plans for mounting details.
- Ambient Light Fixture, see Lighting Plans, Mount tight to HSS6x6, Typ. each 40' section.

Notes:
1. Interior Lighting Conduit Path to top of structure must be field installed after structure is in place.
2. See S-2.05, S-2.01, S-2.26 and Lighting Plans and Details, T-7.01 through T.13 for conduit size & mounting details.

3. See Civil Plans for Type and mounting details.
4. Interior lighting conduit runs vertically up % of HSS6x6 on north side of structure.

Notes:
1. Interior Lighting Conduit Mounted to Top of Structure, See Note 1 and Lighting Plans & Details.
2. Ambient Lighting Conduit, See Details.
3. Ambient Light Fixture Location, See Note 3.
4. Ambient Light Fixture Location, Typ.
5. Sign Location, See Note 2.

SOUTH
NORTH

TRANSVERSE ROOF SECTION - PIER H

Longitudinal Roof Section
INTERIOR ELEVATION - TYP. WEST SEGMENT

REFLECTED CEILING PLAN - TYP. WEST SEGMENT

<table>
<thead>
<tr>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Roof Panel orientation the same for both West Segment and East Segment.</td>
</tr>
<tr>
<td>2. Clerestory Panel orientation opposite hand for West Segment and East Segment. <em>Broken Cloud</em> always to the South.</td>
</tr>
</tbody>
</table>

Types:
- Type 1 - Overlay Panel
- Type 2 - Tab Panel

REFLECTED CEILING PLAN - TYP. WEST SEGMENT

INTERIOR ELEVATION - TYP. WEST SEGMENT
**ASSUMED CONSTRUCTION SEQUENCE**

**STAGE 1**
1. Construct Drilled Shafts.
2. Construct Piers.
3. Construct Circular Deck Section.

**STAGE 2**
1. Survey inside cantilever wing (Span 1-5) of Vehicle Bridge and submit elevations to Engineer prior to Step 2.
2. Install #10 Spandrel Beams & Hangers.

**STAGE 3**
1. Ship and Deliver Ped.Bridge Segments.
2. Stage 40' Ped.Bridge Segments on Vehicular Bridge for Suspended & Deck Supported Sections.
3. Stage 40' & 30' Ped.Bridge Segments on Site for Pier Supported Sections.
4. Stage 40' PedBridge Concrete Deck in Staged Ped.Bridge Segments with Supports & Camber Details 5'-3".

**STAGE 4**
1. Erect all Suspended 40' Ped.Bridge Segments after Ped.Bridge Concrete Deck has achieved 3000 psi strength. Care shall be taken to distribute 40' Ped.Bridge Segment load evenly to 4 Spandrels. See Detail #1 for allowable crane loads.

**STAGE 5**
1. Erect Pier Supported 40' Ped.Bridge Segments after Ped.Bridge Concrete Deck has achieved 3000 psi strength.

**STAGE 6**
1. Erect Deck Supported 40' Ped.Bridge Segments after Ped.Bridge Concrete Deck has achieved 3000 psi strength.

**STAGE 7**
1. Install Landing Railings on Circular Deck Section at east end.
2. Fit up entire Structure with Electrical, Lights, etc.
3. Install Expansion Joints/Over Plates.

*The assumed construction sequence shown does not form part of the contract and is only included for the Information of the Contractor. The Contractor is solely responsible for the design and safety of his own preferred construction sequence. The Contractor shall submit their construction sequence and calculations to Engineer for review prior to pedestrian bridge construction. See also S-1 and S-2 for Phasing of Ped.Bridge with respect to completion of Vehicle Bridge.*
SEGMENT FRAMES

EPSURED SECTION
(PIER SUPPORTED SECTION, ENCLOSED SECTION SIM.)
No Scale

DECK SUPPORTED SECTION
No Scale

PIER SUPPORTED, OPEN SECTION
No Scale

PIER SUPPORTED, ENCLOSED 30'-9" SECTION
No Scale

Notes:
Enclosure design pattern per S-2.31.

Isometrics of Segment Frames
Notes:
1. Type 1 Roof panels are overlay panels. Type 2 are field panels.
2. Clerestory & wainscot panels are inset panels.
3. 1/2" dia. 1 1/4"l long x 1 1/4"l long plate bolt with A325 1 1/4" diam. x 1 1/4" diam. or approved equal KTPE M68.
4. Clerestory and wainscot steel panel to be 1/8" plate.
5. All Roof Panels are rolled/curved, with 1/8" min. thickness. See S-2.20 thru S-2.01 for radius to net size and shall be designed or load tested by Contractor in accordance with Special Provisions.
6. Confirm all dimensions to ensure tight fit and fastening. 1/8" tolerance maximum unless otherwise noted.
7. Pattern design per Special Provisions Item 604003 and S-1.01 & S-1.02.
8. All dimensions shown are unfolded.

Panel Details - 1 of 2

DEPARTMENT OF TRANSPORTATION/ENGINEERING DIVISION

CITY OF TUCSON

PEDESTRIAN BRIDGE

22ND STREET KING PARKWAY TO TUCSON BOULEVARD

INITIAL \ 3/25/08

DRAWN \ 5/23/08

CHECKED \ 6/15/08

DSGN. BY JHS, MJL

1. Typical Roof Panel, Type 1 - Overlay shown

2. Clerestory and wainscot panels to be 1/8" plate bolts with A325 1 1/4" diam. x 1 1/4" diam. or approved equal KTPE M68.

3. Clerestory and wainscot panels are inset panels.

4. All Roof Panels are rolled/curved, with 1/8" min. thickness. See S-2.20 thru S-2.01 for radius to net size and shall be designed or load tested by Contractor in accordance with Special Provisions.

5. Confirm all dimensions to ensure tight fit and fastening. 1/8" tolerance maximum unless otherwise noted.

6. Pattern design per Special Provisions Item 604003 and S-1.01 & S-1.02.

7. All dimensions shown are unfolded.

CIRCULAR DECK WAINSCOT PANEL (18 TOTAL)

Typical Roof Panel - Viewed from Above
Panel Details - 2 of 2

**ROOF PANEL ATTACHMENT**

-Steel Strip 2" x ¾" Top and Bottom, See Note 3.

-Edge of Perf, Pattern Type 2.

-Perf, Pattern Type 2.

**WAINSCOT PANEL ATTACHMENT**

-Steel Strip 2" x ¾" Top and Bottom, See Note 3.

-Edge of Perf, Pattern Type 2.

**LOW ROOF PANEL AT CLERESTORY, TYPE 2 - TAB**

-Adjust Pattern for Type 2 Roof Panels to allow 3" non-perforated edge distance (i.e. pattern perforations will need to be filled in for 3" along 'tab' edge).

Notes:
See Panel Details 1 of 2 for notes.
Handrail Details

1" diam. Pipe
Stanchion

1" diam.
Handrail Pipe

Handrail Details

Handrail Stanchion, see
notch P to accommodate
Cover P occurs,

2"

Handrail
Bracket

3/8"

Center on HSS
at 10° o.c.
Handrail Bracket

"Plate
Both sides, 1/2"

Rail and
Bracket

Typ.

HSS 6x3 or
HSS 6x3, Typ.

PLAN - HANDRAIL ENDS & EXPANSION LOCATION DETAIL

SECTION

PLAN NO.

REF.

SCALE:

N/A

PAGE

1

DEPARTMENT OF TRANSPORTATION/ENGINEERING DIVISION

22ND STREET KING PARKWAY TO TUCSON BOULEVARD

PEDESTRIAN BRIDGE

PRELIMINARY

100%

Review

Net for

Construction

or Recording

June 2018

CITY OF

TUCSON

6/15/2018 10:25:48 AM
Elastomeric Bearing Pad Notes:

1. Elastomeric Bearing Pad shall conform to the current edition of the AASHTO LRFD Bridge Construction Specifications, Section 18.

2. Internal Steel Laminates shall be 14 ga. rolled mild steel per ASTM A570, Grade 36 where Steel Laminates are indicated.

3. Elastomeric Bearing Pad Design Criteria:
   - Design Method: A
   - Low Temperature Zone: A
   - Shear Modulus: 130 psi

4. The cost of Elastomeric Bearing Pads & Bearing Plate assemblies is incidental to the cost of structural steel.

**Notes**

1. The cost of Sliding Bearing Assembly is incidental to the cost of Structural Steel.

2. PTFE (Polytetrafluoroethylene) Sheets shall be made from pure virgin PTFE resin satisfying the requirements of ASTM D4894 and D4895 and shall be fabricated as unfilled sheet and meet the requirements as specified in AASHTO LRFD Bridge Construction Specifications Section 18.8.2.1.

SLIDING BEARING ASSEMBLY = PIERS C & E

**Notes**

- ½" min hardboard, smooth side down over Expanded Polystyrene

**Bearing Details**

- Sliding Bearing Assembly & Piers C & E

1" x 10" x 10" Grout Leveling Pad

PTFE ½" x 10" x 10" bonded to Sole P

PTFE ½" x 12" x 12" bonded to Brg.Pad

Grout Leveling Pad (f’d = 4000 psi)

NOTES

- Assembly Height

- Brg.Pad or Brg. Height to match

- See Detail 1

**POLYSTYRENE PROTECTION DETAIL**

Expanded Polystyrene

Hardboard to be used on any polystyrene face against which concrete is to be placed.

1" x 10" x 10" Grout Leveling Pad

PTFE

PTFE (Polytetrafluoroethylene) Sheets shall be made from pure virgin PTFE resin satisfying the requirements of ASTM D4894 and D4895 and shall be fabricated as unfilled sheet and meet the requirements as specified in AASHTO LRFD Bridge Construction Specifications Section 18.8.2.1.

**Notes**

1. The cost of Sliding Bearing Assembly is incidental to the cost of Structural Steel.

2. PTFE (Polytetrafluoroethylene) Sheets shall be made from pure virgin PTFE resin satisfying the requirements of ASTM D4894 and D4895 and shall be fabricated as unfilled sheet and meet the requirements as specified in AASHTO LRFD Bridge Construction Specifications Section 18.8.2.1.

**Bearing Details**

- Sliding Bearing Assembly & Piers C & E
Notes:

1. The installed expansion device shall conform to the grades and as-built super elevation 1 ft any of the joint locations and provide a smooth surface.

2. Design of expansion joint at West/East End Deck Supported shall be responsibility of Contractor and shall be designed for pedestrian foot traffic and slow speed non-commercial vehicle traffic per loading criteria shown on General Notes, S-2.01.

3. Size and location of anchors per manufacturer.

<table>
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<tr>
<th>Joint</th>
<th>15°F</th>
<th>min.</th>
<th>max.</th>
<th>+10°F</th>
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<th>-10°F</th>
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<td>5.54</td>
<td>&lt;0.28</td>
<td>&lt;0.28</td>
<td>&lt;0.28</td>
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<tr>
<td>East End</td>
<td>4.50</td>
<td>1.27</td>
<td>6.02</td>
<td>&lt;0.67</td>
<td>&lt;0.67</td>
<td>&lt;0.67</td>
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</tbody>
</table>

EXPANSION JOINT AT WEST/EAST END DECK SUPPORTED
No Scale
Camber based on supports located at 0' & 40' when placing C.I.P. concrete deck for suspended section.

CAMBER ORDINATES AT 10TH POINTS (in.)

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<th>0</th>
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<th>0.2</th>
<th>0.3</th>
<th>0.4</th>
<th>0.5</th>
<th>0.6</th>
<th>0.7</th>
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<td>0.24</td>
<td>0.31</td>
<td>0.24</td>
<td>0.18</td>
<td>0.12</td>
<td>0.06</td>
<td>0.0</td>
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Notes:
Camber ordinates represent the required upward construction to offset the net downward deflection due to the effects of dead loads (Future Wearing Surface Excluded), long-term deflections but do not include an allowance for falsework deflection or settlement.
Two working days before you dig.

CALL FOR THE BLUE STAKES

Blue Stake Center
CALL COLLECT
STAKE-IT
1-800-

PLAN - EXIT GATES

SECTION - EXIT GATES

Notes:
1. Heavy duty barrel hinge - Hardened, zinc chromate, S4000 grade, 3,000 lbs. rating per pair of hinges or approved alt.
2. Gates and hinges set flush to swing 180° fully open.
3. Double Dead Bolt keyed to TPF/TFD Schlage Heavy Duty or approved alt. by TPF/TFD.
4. Egress/Ingress Gate and hardware cost incidental to cost ofstylesheet sample text. Structural Steel

Vehicle Bridge
Concrete Barrier

Emergency Egress/Ingress Gates, Typ.

Conc.Barrier

F-Shape Bridge
Top of 34" Vehicle Bridge
Concrete, Barrier

SECTION - EXIT GATES

ENLARGED ELEVATION - EXIT GATES

Top of 34" F-Shape Bridge
Concrete, Barrier

Vehicle Bridge
Concrete, Barrier

2010 Work on UP RR Work Ped Memorial Drive

Notes:
2. Segment welds sim. to 40' structural
3. All Gate welds to HSS 4x4
4. Ingress Gate, Typ.
6. Barrel Hinge, beyond
7. Enclosure Frame, beyond
8. Concreted Barrier
9. Vehicle Bridge

Roadway elevations:

Sta.55+38.13
Sta.55+78.12

Run:

1/"=1'-0"

Plan - Exit Gates

Phase 1

Department of Transportation/Engineering Division

Egress/Ingress Gates

6 ft.0")

Egress/Ingress Gates

6 ft.0")

Typ.

Typ.

Typ.

Typ.

Typ.

Typ.

Typ.

Typ.

Typ.

Typ.

Typ.

Typ.

Typ.

Typ.

Typ.

Typ.

Typ.

Typ.

Typ.
GENERAL NOTES
1. General soil and rock (where encountered) strata descriptions and indicated boundaries are based on engineering interpretation of available subsurface information by the geotechnical engineer and may not reflect actual variation in subsurface conditions between borings and samples. The location of contacts between strata may be gradual rather than abrupt. Classification of soil material is in general accordance with ASTM D 2488-93 and is presented in the Geotechnical Report.

2. The observed water levels and/or moisture conditions indicated on the boring logs are as recorded at the time of field investigation. These water levels and/or moisture conditions may vary considerably with time according to the prevailing climate, rainfall or other factors and are otherwise dependent upon the duration of and methods used in the field investigation program.

3. Sound engineering judgment was exercised in preparing the subsurface information presented on these sheets. This information was prepared and is intended for design and estimating purposes. The presentation on the plans of elsewhere is for the purpose of providing intended users with access to the same information as was provided to the City of Tucson and its designers. Interpretations of subsurface information are presented in good faith and are not intended as a substitute for personal investigation, independent interpretations or judgment of the contractor.

4. A 140 lb. hammer, 30-inch free-fall, was used to drive both the Standard Penetration Test (SPT) split-spoon sampler and the ringed sampler in general conformance with ASTM D 1586-96 and D 5050-95, respectively.

5. For further information, refer to SCE reports “Final Geotechnical Report - 22nd Street Kino Parkway to Tucson Boulevard” submitted to AECOM and any Addenda.

6. Reaction to dilute HCl (as per ASTM D 2488) does not necessarily correlate to the degree of carbonate cementation. For example, a “strong” reaction to HCl and a low SPT-N value may indicate that the soil particles are coated with calcium carbonate or lime but the voids are mostly clear, i.e. the particles are not significantly cemented to each other; therefore, the density is loose. In other cases, soil may exhibit “no” to “weak” reaction to HCl but appear to be strongly cemented due to induction. Thus, the user should consider the reported reaction to HCl and SPT-N values in conjunction with other relevant factors to evaluate the degree of cementation and its effect on construction activities.

7. Refusal SPT-N values may be indicative of the presence of cobbles or boulders whose size cannot be determined by the investigative techniques used for this project. Cobbles and boulders will likely be encountered during the construction of the drilled shafts. Additionally, cemented layers may form cobbles or boulder size pieces when broken up. The contractor should mobilize the appropriate equipment for removing this material.

8. The site soils contain random zones of poorly graded and well graded sands and gravels. These soils may be prone to caving. Therefore, localized caving should be anticipated during drilled shaft construction. These local zones may be up to 20-ft thick and can occur at various depths.

9. The site soils contain random zones of gravels, cobbles and boulders. These materials experience large fluid loss during slurry-assisted drilled shaft construction.

OTHER TERMINOLOGY

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<th>Quantity</th>
<th>Reaction to HCl</th>
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<tr>
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<tr>
<td>Some</td>
<td>Violent reaction</td>
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<tr>
<td>Mostly</td>
<td></td>
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FUNDAMENTAL DATA

FOUNDATION DATA (PEDESTRIAN BRIDGE) SF - 2.01 of SF - 2.07

DEPARTMENT OF TRANSPORTATION/ENGINEERING DIVISION
22nd Street: KING PARKWAY TO TUCSON BOULEVARD

Preliminary Design
Not for Construction

Department of Transportation/Engineering Division
June 2005

City of Tucson

SCIENCE, TECHNOLOGY, AND ENGINEERING, CITY OF TUCSON
### Boring Plan

**Scale**: 1" = 50'-0" 22" x 34" F

#### West Area Plan View

- **Pedestrian Bridge**
- **Pier 1**
- **Abut 1**
- **22nd Street Westbound**
- **22nd Street Eastbound**

#### East Area Plan View

- **Pier 4**
- **Abut 2**
- **22nd Street Eastbound**
- **Pier 4 Pedestrian Bridge**

### Foundation Data

**(SF - 2.02 of SF - 2.07)**

**Location**: 22nd Street - King Parkway to Tucson Boulevard

**Department of Transportation/Engineering Division**

**City of Tucson**

**Recorded**: June 2006

---

**Table:**

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<th>To</th>
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<td></td>
<td></td>
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<tr>
<td>P802</td>
<td></td>
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**Notes:**

- Boring logs P801 and P802 are detailed for specific locations.
- Detailed boring logs and samples are shown.
- Diagrams illustrate the plan views of the west and east areas.

---

**Foundation Data (Pedestrian Bridge):**

- **SF - 2.02 of SF - 2.07**
- **Preliminary Study**
- **22nd Street - King Parkway to Tucson Boulevard**
- **City of Tucson**
- **Recorded**: June 2006

---

**Regarding Boring Location:**

- **Boring Location**
- **Scale 1" = 50'-0" 22" x 34" F**

---
GENERAL NOTES:


This barrier is structurally evaluated as meeting the requirements of KNP Report 350 Test Level 4.

1. All Concrete shall be Class S* (f'c = 4000 psi).
2. Reinforcing steel shall conform to ASTM Specification A615. All reinforcing shall be furnished as Grade 60. All reinforcing shall be epoxy coated at locations above EL 4000 ft.
3. All joints shall be repaired when the requirements of AASHTO LRFD Article 5.10. All bend dimensions shall have a "bituminous joint filler in open joints over piers. See bridge drawings for details.
4. Indexed 1/2", Bridge Number and Year Built, using 1/16 inch gap and weld both ends of splice tube.
5. All reinforcing steel shall have 3/8 inch clear cover unless noted otherwise.
6. Structural tubing (TS) shall be ASTM A500 Grade B.
7. All other structural steel shall conform to ASTM A36 unless noted otherwise.
9. Concrete parapets on continuous superstructures shall have a "bituminous joint filler in open joints over piers. See bridge drawings for details.
10. Reinforcing steel shall have a "bituminous joint filler in open joints over piers. See bridge drawings for details.
11. Load and materials for railing, parapet, cede, anchors, concrete parapet, sidewalk and PEDESTRIAN FENCE (SD 1.05) are included in the pay Item (Item No. 6011132).

Dimensions shall not be scaled from drawings.

Item No. 6011132 COMBINATION PEDESTRIAN-TRAFFIC BRIDGE RAILING

Measures Linear Foot

SECTION A-A

TYPICAL PANEL ELEVATION

ELEVATION AT EXP. JT.

SECTION B-C

ELEVATION AT END POST

SECTION C-C

PLATE DETAIL

RAILING NOTES:

See Bridge Plans for rail layout, elevation, joint locations and rail and treatments.

All exposed steel edges shall be ground smooth. All structural steel rail assembly components shall be galvanized after fabrication in accordance with ASTM A525. All galvanizing that has been damaged in handling, transportation or welding shall be repaired by the application of a paste compound of an approved zinc powder and flux. All post bolt heads shall be on sidewalk side. All bolts, nuts and washers shall be galvanized in accordance with the requirements of ASTM A153.

For fence attachment shall be details see Structure Detail SD 1.05. (Lower rail tube is not required with fence.)
**Note to Designer:**
The information presented in this Standard Detail has been prepared in accordance with recognized engineering principles and is for general use. It should not be used for specific application without competent professional examination and verification of its suitability and applicability by a licensed professional engineer. Contents within the inner border line shall not be altered.

**LOCATION**

**FA NO.**

**PROJECT NO.**

**SHEET NO.**

**DESCRIPTION OF REVISIONS**

1. Original Issue
2. 
3. 
4. 

**PAYMENT LIMITS**

**SD 5.01**

**TYPICAL ABUTMENT FOOTING PLAN**

**TYPICAL ABUTMENT SECTIONS**

**WINGWALLS**

**TYPICAL PIER FOOTING PLAN**

**TYPICAL PIER ELEVATIONS**

**PIER SECTION**

**LEGEND**

- Structural Excavation
- Roadway Excavation

**NOTES:**

For structure foundations above original ground line, construct roadway embankment to top of berm or finished grade before structural excavation is made. No excavation payments for footings on piles or drilled shafts (within Roadway Embankment).

If no roadway excavation or embankment is involved, structural excavation shall be measured from the original ground line.

<table>
<thead>
<tr>
<th>Description</th>
<th>Measurement</th>
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<tbody>
<tr>
<td>(Front face)</td>
<td>3&quot; (min)</td>
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</tbody>
</table>

**TYPICAL RETAINING WALL SECTIONS**

**INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION**

** drawers
drawers**
### GENERAL NOTES:


**Walls** shall be constructed in accordance with the Standards and/or Special Provisions as indicated, unless noted otherwise.

Use of AASHTO Standard Wall Drawings - Where Standard Drawings are used, wall section dimensions and reinforcing shall be per "H", indicated on the Project Plans. Top of wall and top of footing elevations shall be as shown on the Project Plans regardless of the value of "H".

AASHTO Standard Wall footings shall not be poured continuously. See Joint Details.

Chamfer all exposed corners 3/4" unless noted otherwise, Dimensions shall not be deducted from drawings.

Safeguards: 1. Site Class C, PDA = 0.07g.

**Stresses:**

Concrete (Cast-In-Place Walls)  
Grade 60 reinforcing steel (unless noted otherwise)  
Grade 40 reinforcing steel (unless noted otherwise)

**Temporary Shoring:** Temporary shoring may be required for excavation and construction of walls to accommodate the work without adversely affecting existing facilities/utilities. The contractor shall be responsible for providing temporary shoring as required to maintain traffic, to protect existing structures, and to prevent wall failure. The contractor shall submit a plan to the Engineer for review and approval prior to proceeding with the work. For additional information, see the Special Provisions. No additional payment will be made for temporary shoring.

Walls shall be painted in accordance with the Special Provisions and Standard Specifications. See Drawing S-1.17 for paint color and material.

### WALL SUMMARY

<table>
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<tr>
<th>Wall No.</th>
<th>Description</th>
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<th>Allowable Alternative Wall Type</th>
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<td>Retaining Wall 50 CO (Case II)</td>
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### GENERAL NOTES (CONT.)

*Retaining wall geometry refers to the exposed face of wall, unless noted otherwise.*

Where retaining walls support roadways, the top of wall shall follow the profile of the adjacent roadway. The contractor shall verify the top of wall elevations shown on the Project Plans prior to fabricating rebar.

For soil boring log and geotechnical information, refer to the AAROT Final Geotechnical Report dated August 11, 2015 by NCS Consultants, LLC.

All utilities shown on the Project Plans are provided for the contractor's general information only; the locations are approximate. The contractor shall be responsible for determining the actual location of utilities in the vicinity of wall construction. Existing utility locations shown reflect the findings of the latest available mapping, prior to existing condition plans for status of existing utilities. Refer to existing condition plans for status of existing utilities. For soil boring logs and geotechnical information, refer to the DRAFT Final Geotechnical Report dated August 11, 2015 by NCS Consultants, LLC.

The wall height changes linearly between joints. Linear interpolation shall be used to calculate the top of wall where not shown in the plans.

Finished grade elevations along the face of the walls are provided for the contractor's use in locating wall drainage. The contractor shall verify the finished grade elevation prior to installing wall drainage.

### AASHTO STANDARD DRAWING LIST

- Bridge Group 50 Drawings - SD 7.01.

### LEGEND:

- **Section Letter**
- **Detail Letter**
- **Elevation Letter**
- **Dwg Number**

### NOTE:

- Chapter all exposed corners 3/4" unless noted otherwise.
- Dimensions shall not be deducted from drawings.

Safeguards: 1. Site Class C, PDA = 0.07g.

**Concrete (Cast-In-Place Walls)**

- Grade 60 reinforcing steel (unless noted otherwise)
- Grade 40 reinforcing steel (unless noted otherwise)

**Temporary Shoring:** Temporary shoring may be required for excavation and construction of walls to accommodate the work without adversely affecting existing facilities/utilities. The contractor shall be responsible for providing temporary shoring as required to maintain traffic, to protect existing structures, and to prevent wall failure. The contractor shall submit a plan to the Engineer for review and approval prior to proceeding with the work. For additional information, see the Special Provisions. No additional payment will be made for temporary shoring.

Walls shall be painted in accordance with the Special Provisions and Standard Specifications. See Drawing S-1.17 for paint color and material.
NOTES:
1. Walls shall be paid for at the contract unit price per square foot which shall be considered full compensation for the wall complete in place including all necessary excavation, over excavation, backfill, structure backfill, proof rolling, concrete, reinforcing, shoring & painting as shown in the Project Plans.

2. Approximate quantities for wall structural excavation, structure backfill, Class 'S' concrete & reinforcing steel are provided for the contractor's information only & will not be paid for separately. The costs for these items shall be included in the square foot cost of the walls.

3. Approximate quantities of structural excavation & structure backfill have been estimated in accordance with the details shown on this drawing.

4. Backrub shall be paid for under Bid Item No. 9330008 at the contract unit price per LF.

LEGEND
- Indicates Structural Excavation
- Indicates Structure Backfill
- Indicates Roadway Embankment
- Indicates Structure Backfill Compacted to Maximum Dry Density Corresponding to 100% of the Standard Proctor Effort According to ASTM D698, Moisture Content 1% of Optimum.
- Indicates Subgrade Proof-Rolled In
- Indicates Roadway Embankment
- Indicates Structural Excavation
- Indicates Structure Backfill

As built quantities:

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<th>Wall No.</th>
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<th>Retaining Wall (Case 2) SF</th>
<th>Retaining Wall (Case 3) SF</th>
<th>Structural Excavation CY</th>
<th>Structural Backfill CY</th>
<th>Class 'S' Concrete f'c = 3000 psi CY</th>
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Approximate quantities of structural excavation & structure backfill have been estimated in accordance with the details shown on this drawing.

According to ASTM D698, Moisture Content within ±0.5% of the Standard Proctor Effort to Maximum Dry Density Corresponding to 100% of the Standard Proctor Effort.

Indicates Subgrade Proof-Rolled In According to the Requirements of Section 203-5 of the Special Provisions.
See Dwg S-3.17 for Light Pole Details.
**WALL 9 ELEVATION**

- **Total Wall Length:** 45'0" (Case I)
- **Horizontal Scale:** 1" = 10'0"
- **Vertical Scale:** 1" = 5'0"

**WALL 12 ELEVATION**

- **Total Wall Length:** 65'4"
- **Horizontal Scale:** 1" = 10'0"
- **Vertical Scale:** 1" = 5'0"

---

**NOTES:**

- End Wall 9, Sta 10+45.00: Top of wall elevation shall match existing culvert.
- End Wall 12, Sta 10+45.00: Top of wall elevation shall match existing culvert.

---

**Summary:**

- **Utilities Reflect:** The location of all utilities is approximate. See the latest available mapping.
- **Review:** The location of all utilities is approximate. See the latest available mapping.
- **Preliminary:** Preliminary plans and elevations.
- **100%:** Final plans and elevations.

---

**Handrail Details:**

- See Dwg S-3.16 for Handrail Details.

---

**See Utility Plans:**

- See Utility Plans for new storm drain and gas line.
- See Utility Plans for existing utility locations.

---

**Drawings:**

- Wall 9 Elevation
- Wall 12 Elevation
- Utility Plans
- Drainage Plans

---

**ADOT SD 7.01:**

- Case III: Total Wall Length = 45'0"
- Case II: Total Wall Length = 65'4"
See Dwg S-3.16 for Light Blockout Details.
Plan & Elevation

WALL 13 ELEVATION

Vertical Scale: 1" = 50'
Horizontal Scale: 1" = 10'-0"

1540 1550 1560 1570 1580

Ramp A Const \-
Barraza-Aviation Pkwy

Sta 10+00.00 = Begin Wall 13
Sta 16+32.91, 18.50' Rt
Sta 16+73.67, 18.50' Rt
Sta 10+60.00 = End Wall 13

Exist Ground

Exist 24" Storm Drain

- Finished Grade

TOF El = 2456.22

TOF El = 2457.81

TOF El = 2456.94

TOF El = 2456.51

TOF El = 2453.00

R = 1450.89'

Finished Grade

ADOT SD 7.01 (Case IV)

Total Wall Length = 60'-0"

The location of all utilities is approximate only. Locations shown reflect the findings of the latest available mapping.

In Maricopa County: (602) 263-1100
Dial 8-1-1 or 1-800- STAKE-IT (782-5348) before you begin excavation.
Call at least two full working days prior to your planned excavation.
Arizona Blue Stake, Inc.
HANDRAIL NOTES:
1. Handrail shall be constructed per PAG Standard Detail 105 - Latest Revision.
2. For information not shown, see PAG Standard Detail 105 - Latest Revision.

WALL PENETRATION NOTES:
1. Typical wall penetrations shall not be paid for separately. Costs shall be considered incidental to wall construction.
2. Fill annular space between pipe or light fixture & blockout with non-shrink grout.
3. Terminate interrupted reinforcing 2 inches clear of opening.
4. Vertical wall reinforcing interrupted by the opening shall be replaced by additional bars of the same size on each side of the opening at one half the specified vertical wall spacing. These additional bars shall extend full height of the wall. Back face reinforcing shall be channeled into the footing per the ADOT SD 7.01. Front face reinforcing shall be lapped to additional #4 x 240 dowels into footing.
5. Back face is soil side of wall.
6. See lighting plan sheet T-7.07 for luminaire mounting height.

Handrail shall be constructed per PAG Standard Detail 105 - Latest Revision.
For information not shown, see PAG Standard Detail 105 - Latest Revision.
LIGHT POLE BLISTER PLAN
Scale: 1" = 1'-0

NOTES:
3. The upper 3" of the anchor bolts shall be threaded.
4. Anchor bolts shall be fabricated in accordance with the requirements of ASTM A307.
5. All bolts, nuts & washers shall be galvanized in accordance with the requirements of ASTM A53.
6. For conduit & electrical details, see Lighting Plans.
7. Light pole blisters shall not be paid for separately. Additional concrete & steel are considered incidental to the cost of the retaining wall. No additional payment will be made for anchor bolts & associated hardware. Their cost shall be considered incidental to the cost of the retaining wall.

SCALE: 1" = 1'-0

SECTION: 1'-0
### Elevation Data Table

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**NOTE:** Linear interpolation shall be used to calculate the finished grade elevations where not shown in the plans.